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A FIRE MANAGEMENT STRATEGY FOR THE JENNIE LAKES WILDERNESS

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ABSTRACT

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Title A Fire Management Strategy for the Jennie Lakes Wilderness

Abstract: The Jennie Lakes Wilderness is located on the Hume Lake Ranger District of the Sequoia National Forest. Management direction of the Sequoia National Forest Land and Resource Management Plan (LMP) is to use prescribed fires (planned and unplanned ignitions) to enhance wilderness values. The Jennie Lakes Wilderness is characterized by a fire regime of infrequent, low-intensity surface fires. The wilderness is adjacent to the backcountry wilderness of Sequoia and Kings Canyon National Parks, which has been managed under a prescribed natural fire program since 1968.

Public comments have indicated substantial support for a wilderness fire management strategy which would allow fire to play a more natural role within the Jennie Lakes Wilderness. This paper applies National, Regional, and Forest policy and planning direction along with physical, social, economic, environmental, and other factors to develop a strategy for the management of fire within the Jennie Lakes Wilderness.

PROJECT PAPER ORGANIZATION

Organization of this project paper follows an academic format provided by Clemson University. Chapter One presents a general introduction to the District followed by an introduction to the Jennie Lakes Wilderness and Forest Service fire management policy. Chapter Two reviews pertinent research and literature relating to seven specific elements of wilderness fire management. Chapter Three discusses the procedures utilized in collection and treatment of data. Chapter Four analyzes fire history; fire regimes and vegetative classification; and public issues, concerns, and perceptions specific to the Jennie Lakes Wilderness. Chapter Five provides a summary of procedures, analyses, and conclusions. A recommended interim wilderness fire management plan for the Jennie Lakes Wilderness is included in this chapter.

Cover Photo: Rowell Meadow and Profile View, elevation 9,200 feet.

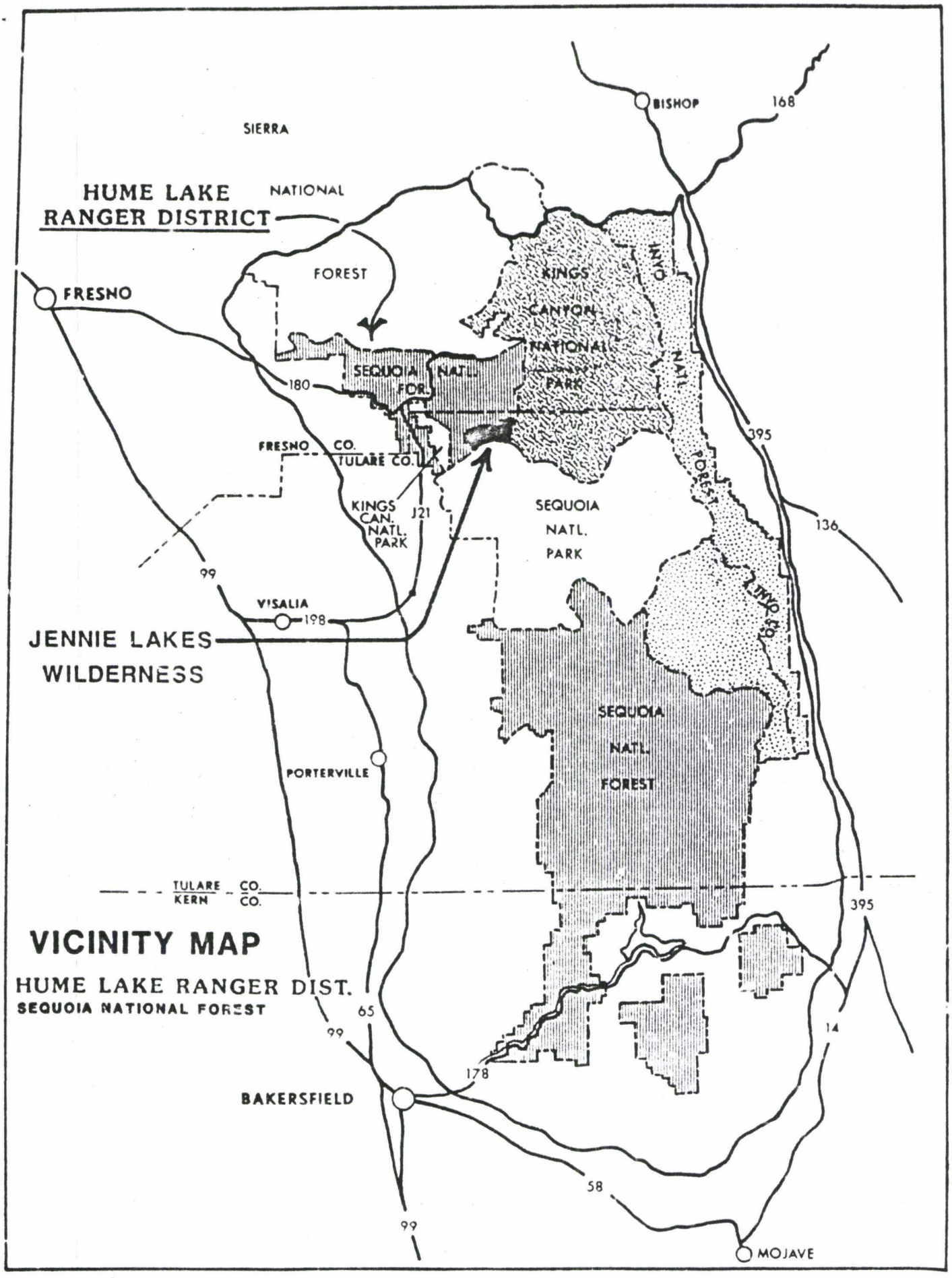
ACKNOWLEDGEMENTS

The author would like to recognize the many people who assisted with the preparation of this Clemson Project Paper. Without their involvement and assistance the development of a fire management strategy for the Jennie Lakes Wilderness would have been impossible.

Louise Larson, Fuels Forester on the Hume Lake District, researched and drafted the literature review of vegetative distribution and fire regimes. Dan Battreall, Assistant Fire Management on the Hume Lake District, researched the fire history of the Jennie Lakes Wilderness. Lee Belau, Sequoia National Forest Fire Management Officer, and Jerry Gelock, Sequoia National Forest Recreation Officer/Land Management Planner, provided moral support and assistance when it was needed the most. Larry Caplinger, Fire Management Officer on the Stanislaus National Forest, provided technical assistance in the development of the interim wilderness fire management plan. Tom Nichols, Environmental Specialist for Sequoia and Kings Canyon National Parks, provided valuable input and was a "sounding board" for my ideas.

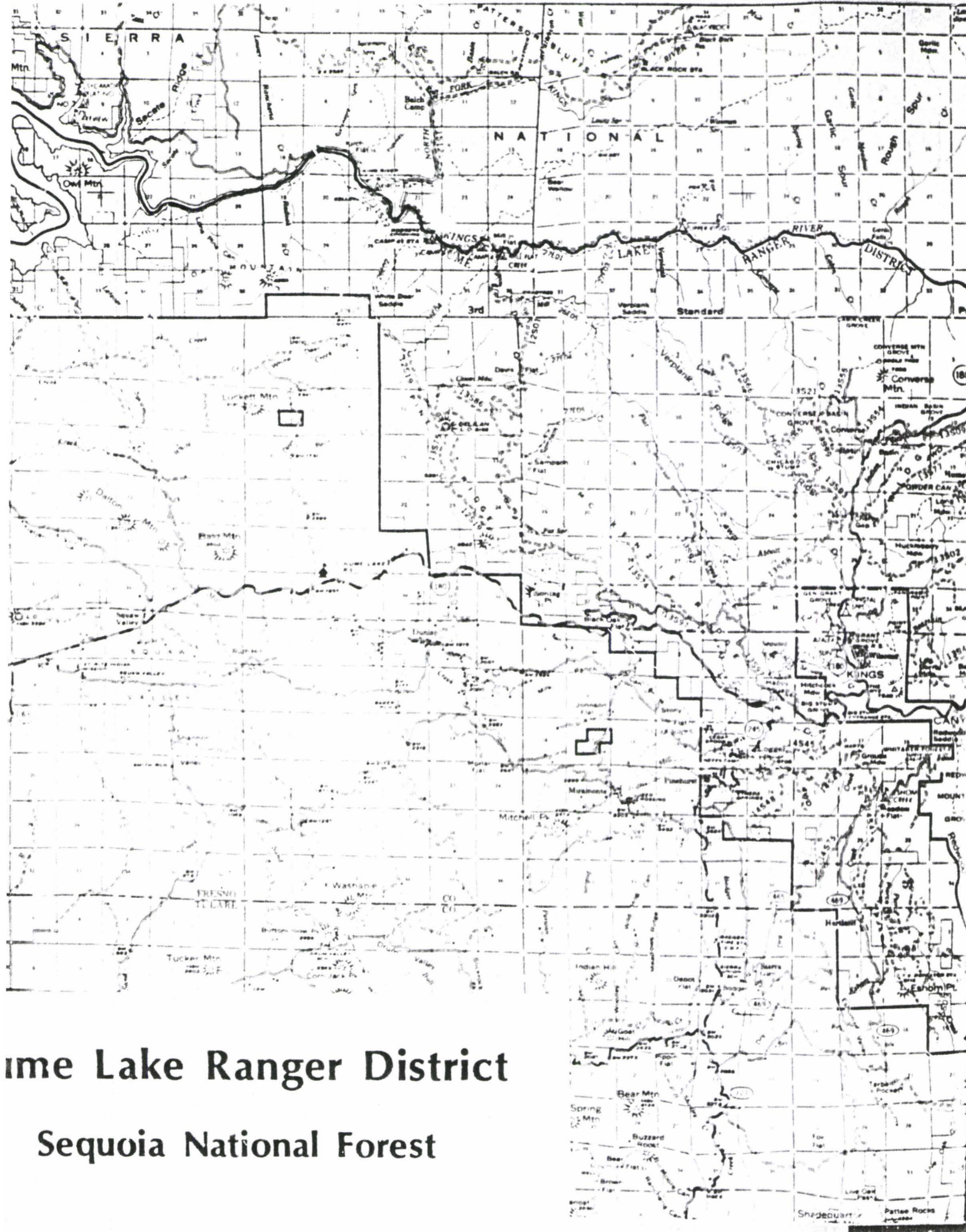
A special thanks goes to Punky McClellan and Rod Kindlund, of the Sierra National Forest, for assistance in preparing the photographs and graphics for the project paper. A very special thanks goes to the Hume Lake District Resource Staff: Mary Allison, Steve Anderson, and Bruce Giampaoli, who endured countless hours of delegation, willfully taking up the slack to provide the extra time necessary to complete the project.

Michael L. Evans
July 15, 1988



VICINITY MAP

HUME LAKE RANGER DIST.
SEQUOIA NATIONAL FOREST



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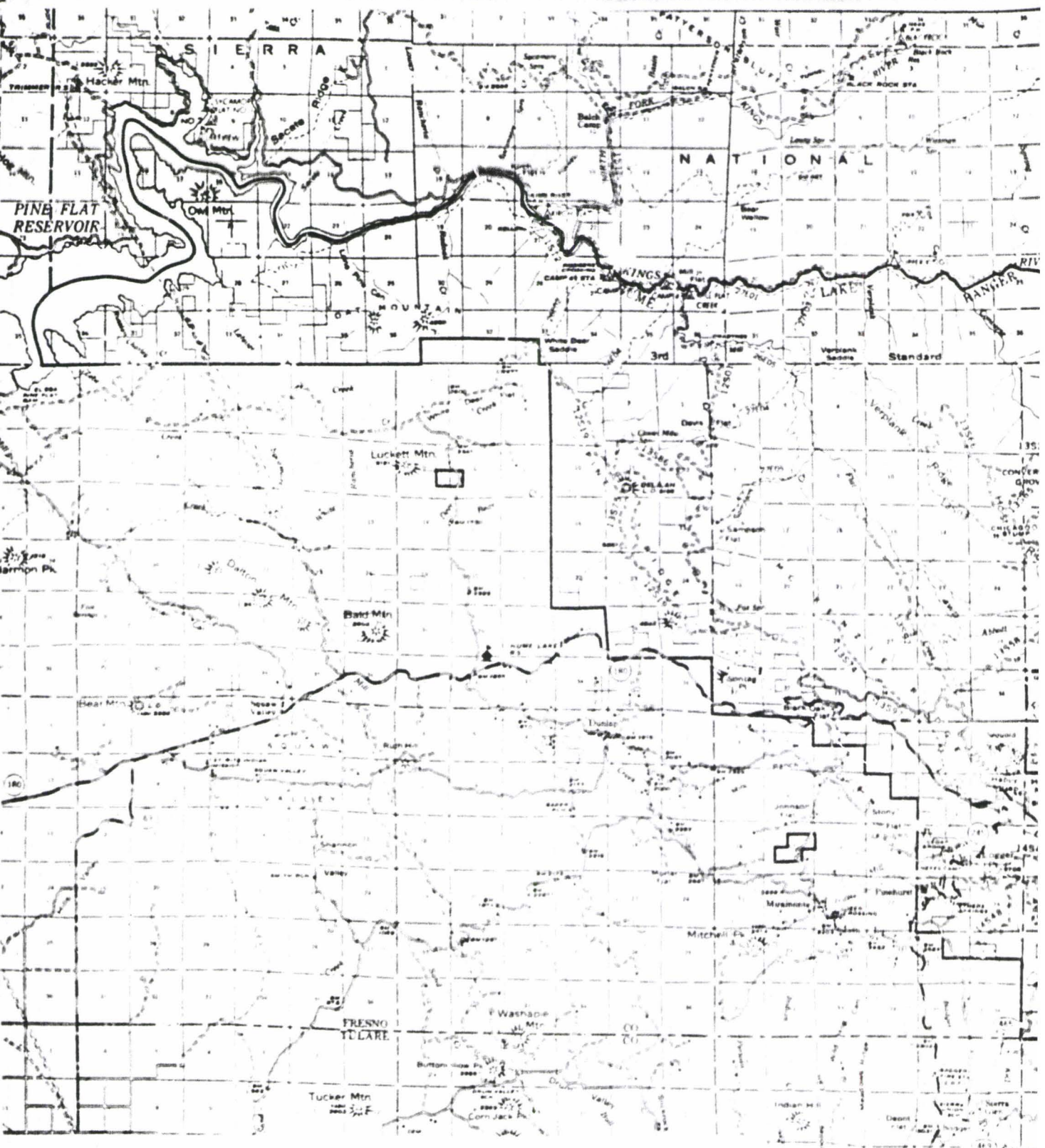
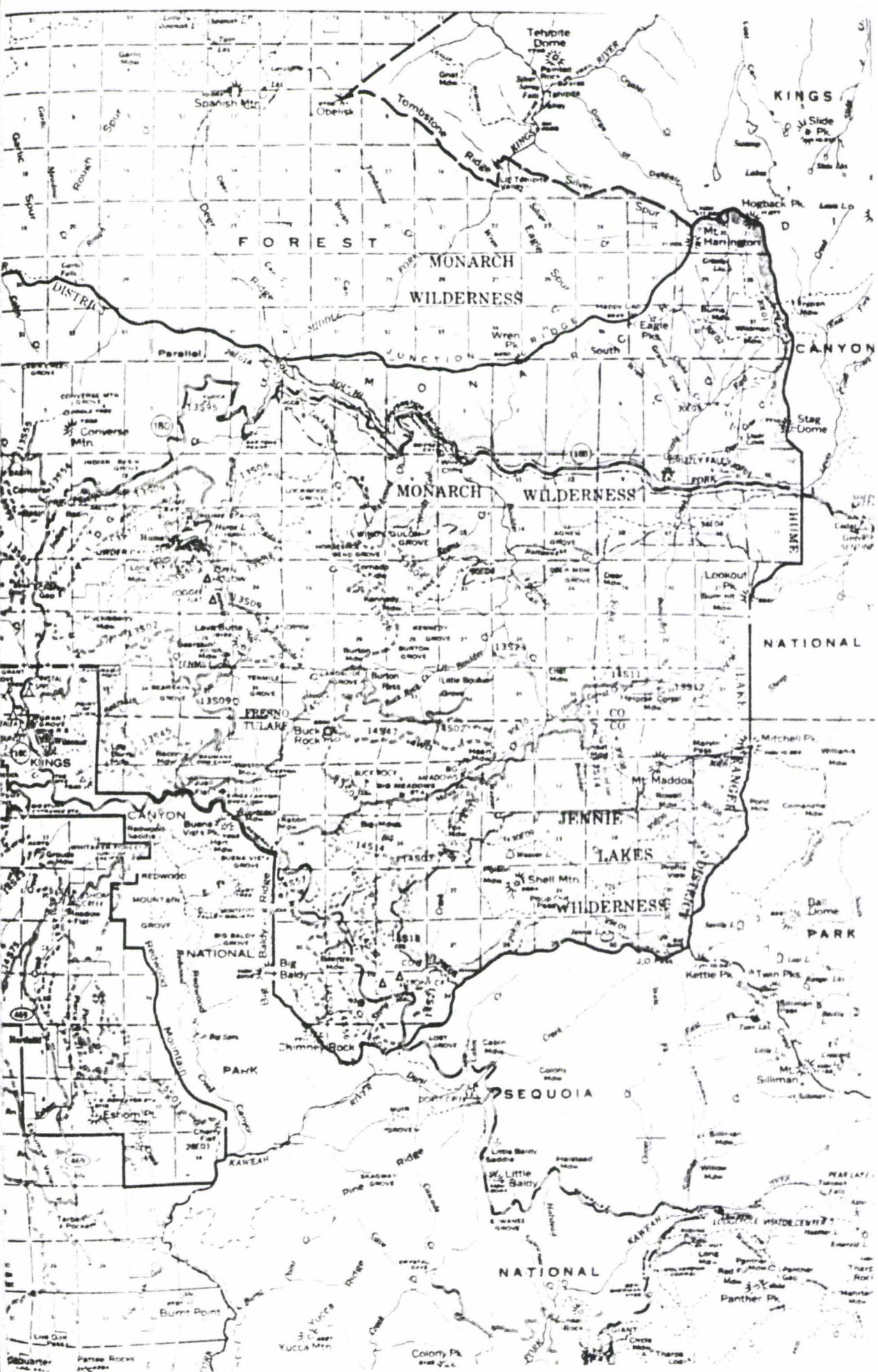


Hume Lake Ranger District

Sequoia National Forest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KINGS
Slide Pk.
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FOREST
MONARCH
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DISTRICT
Parallel
Wren Pk.
JUNCTION
RIDGE
Eagle Pks.
South
CANYON
Converse Mtn.
Stag Dome
MONARCH
WILDERNESS
Lookout Pk.
NATIONAL
FRESNO
TULARE
Buck Rock
KINGS
CANYON
Mt. Maddox
JENNIE
LAKES
WILDERNESS
Shell Mtn.
Redwood
Buena Vista Pk.
NATIONAL
Big Baldy
Chimney Rock
PARK
SEQUOIA
Kettle Pk.
Twin Pks.
Mt. Silliman
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Burnt Point
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Colony Pk.
Pattee Rocks
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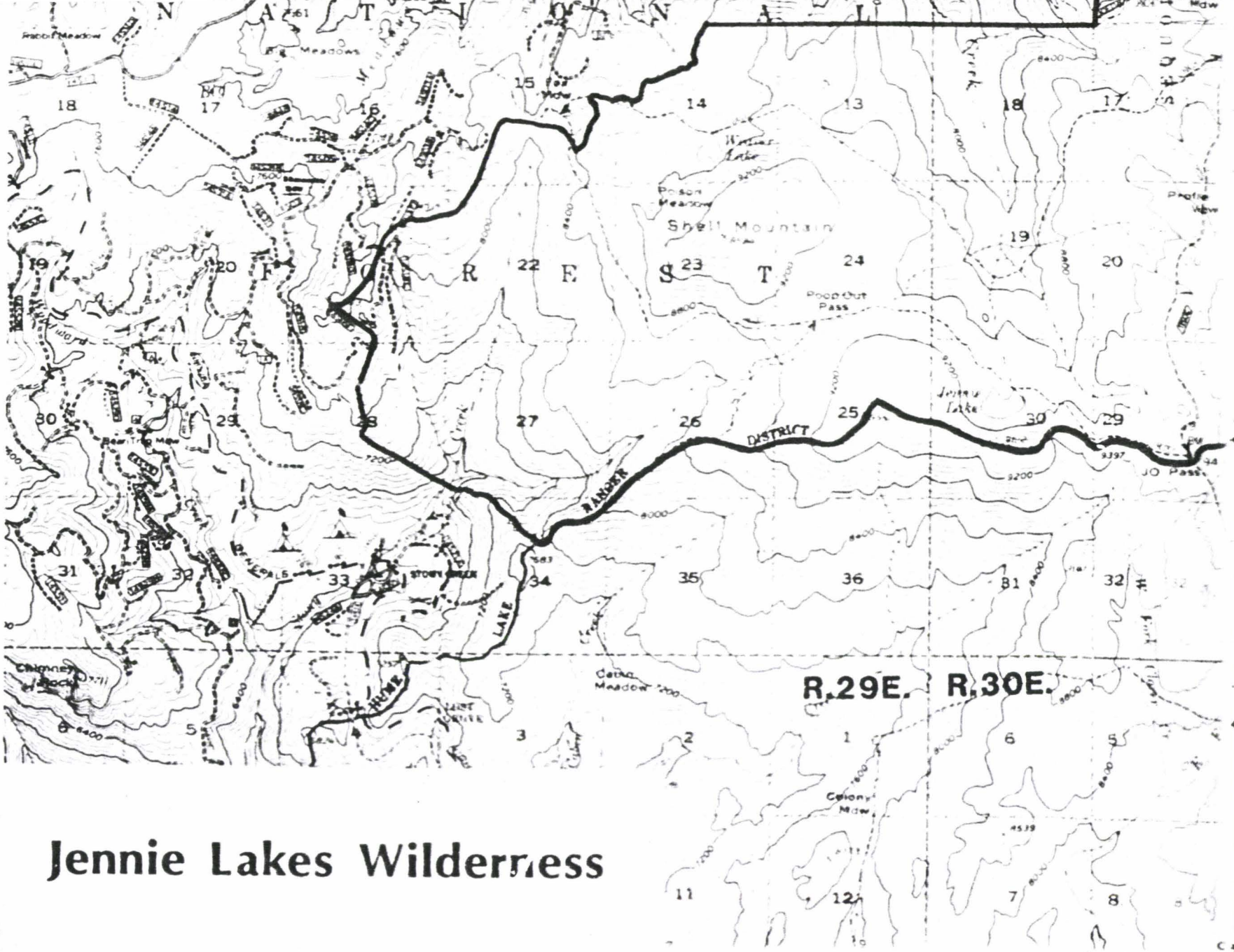
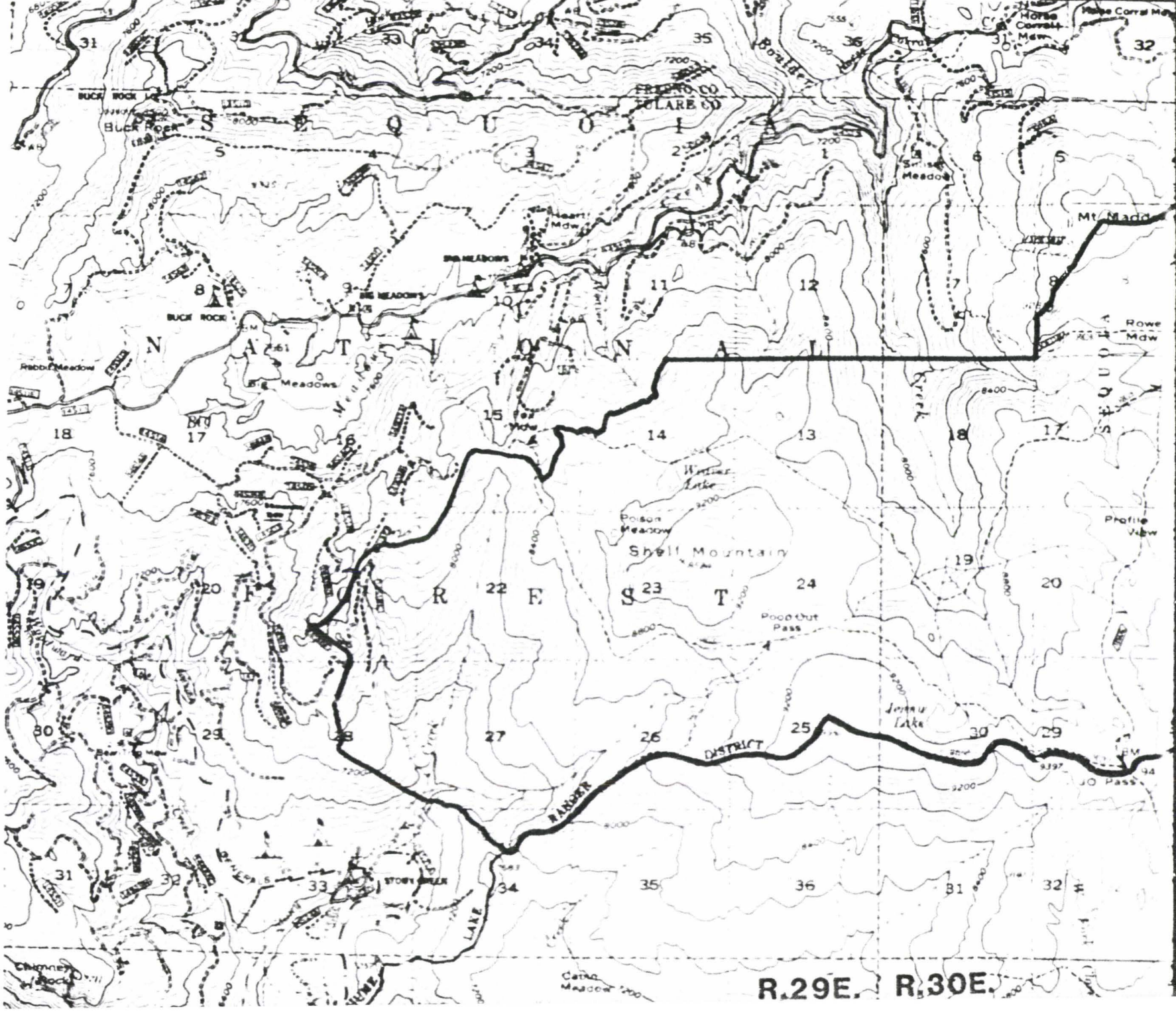


Jennie Lakes Wilderness


PLUMAS CO
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Profile View
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Shell Mountain
Poor Boy Pass
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Story Creek
Chimney Rock
Cedar Meadow
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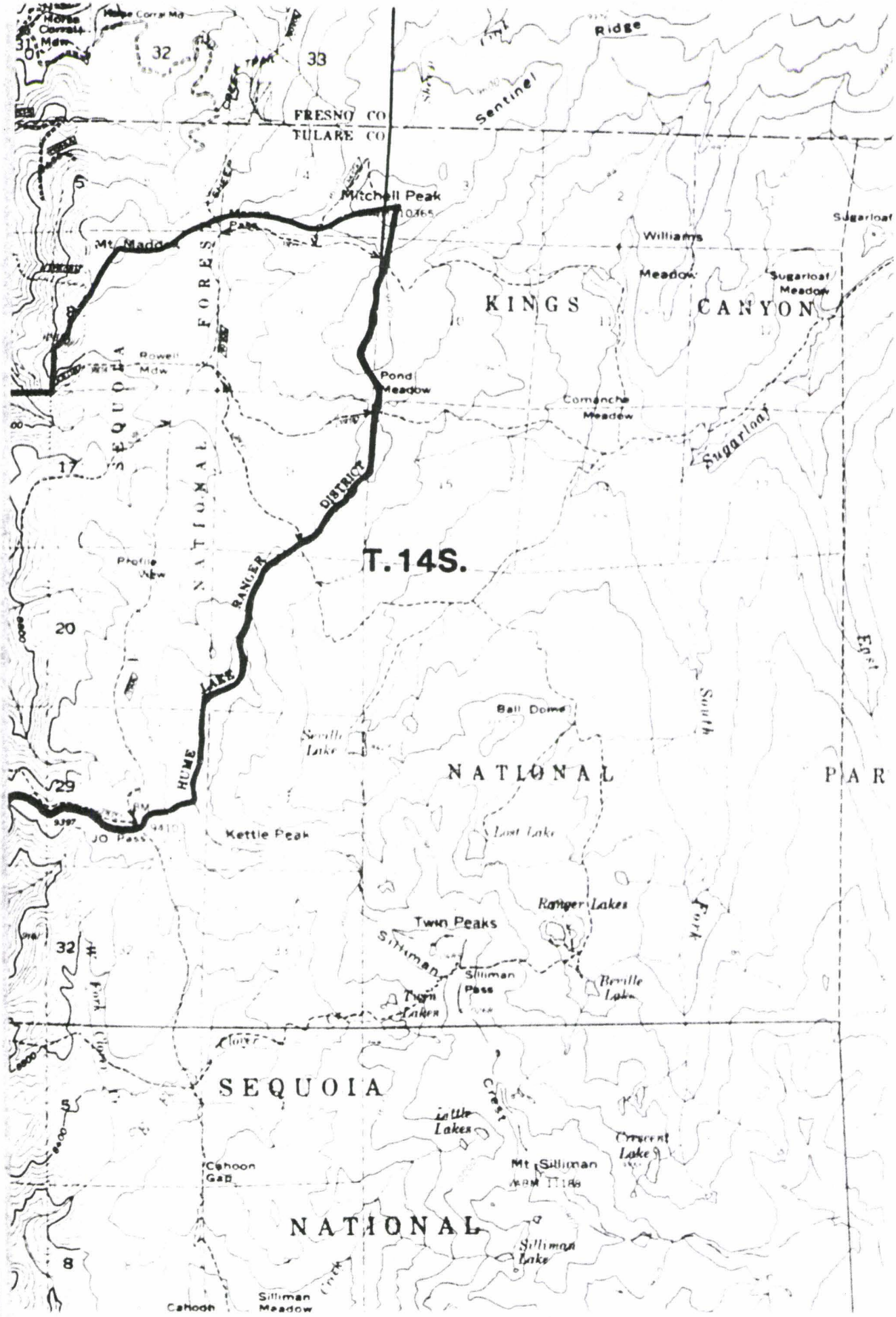
FRESNO CO
TULARE CO
Mitchell Peak
10365
Mt. Maddox
Sentinel Ridge
Williams Meadow
Sugarloaf Meadow
KINGS CANYON
Pond Meadow
Comanche Meadow
Sugarloaf
SEQUOIA NATIONAL FOREST
GENERAL'S HIGHWAY
GENERAL'S HIGHWAY
RANGER DISTRICT
T. 14S.
Profile Mdw
Ball Dome
Seville Lake
NATIONAL PARK
HUME LAKE
Kettle Peak
JO Pass
Lost Lake
Ranger Lakes
Twin Peaks
Silliman Pass
Tyndall Creek
Tyndall Lakes
Seville Lake
SEQUOIA
Little Lakes
Crescent Lake
Mt. Silliman
Cahoon Gap
NATIONAL
Silliman Lake
Cahoon
Silliman Meadow

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EXECUTIVE SUMMARY

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Title A Fire Management Strategy for the Jennie Lakes Wilderness

Summary: The intent of this project paper is to utilize National, Regional, and Forest policy and planning direction and develop a fire management strategy for the Jennie Lakes Wilderness given the physical, social, economic, environmental, and other constraints of the wilderness. Such a strategy would include the management of wildfires as well as prescribed fires with both planned and unplanned ignitions.

Public policy and management direction obtained through a review of Forest Service manuals and handbooks, public laws, and management plans indicated prescribed fires (planned and unplanned ignitions) were both authorized and desirable in the Jennie Lakes Wilderness. In short, the fire management policy of the Forest Service is to permit lightning fires to play as nearly as possible their natural role within the wilderness setting. Wildfires (unplanned person-caused fires and all fires not meeting preplanned prescribed conditions) require an appropriate suppression action.

A review of the Sequoia National Forest Land Management Planning Data Base, along with a review of pertinent literature and field sampling by the author, showed the Jennie Lakes Wilderness to be characterized by stands of red fir, lodgepole pine, western white pine, jeffrey pine, and white fir. Elevations were generally above 8,000 feet with less than 13 percent of the area having slopes in excess of 40 percent. The fire regime was one of infrequent, low intensity surface fires.

Both the literature and the results of scoping by the author indicate substantial public support for a policy of allowing fires ignited by lightning to burn within prescribed conditions without being subject to suppression action. Sequoia and Kings Canyon National Parks enthusiastically

supported such a policy, and suggested a joint operating plan between the two agencies be developed. The operating plan would allow prescribed fires to burn across administrative boundaries. The National Park Service within the two parks has maintained a natural fire program since 1968, but currently suppresses fires near the National Forest wilderness boundary.

Since 1940, only 104 fires have been recorded within the Jennie Lakes Wilderness. All have been less than one acre. Seventy-two percent were caused by lightning. Based on the historical fire record, fire regimes present, and climatic conditions, fires occurring within the wilderness are not expected to exceed the wilderness fire management parameters of the Sequoia National Forest Land and Resource Management Plan. Fires near the wilderness boundary which threaten non-wilderness resources, and fires which threaten public safety will require an appropriate suppression action.

A detailed recommended interim wilderness fire management plan for the Jennie Lakes Wilderness is included in the project paper. The plan outlines specific fire management direction, prescription guidelines, reporting and implementation procedures, monitoring requirements, public safety and information direction, cooperation with the National Park Service, financial management constraints, and evaluation requirements for the management of fires (both prescribed fires and wildfires) within the Jennie Lakes Wilderness.

CHAPTER ONE

INTRODUCTION

Objectives

The objectives for this project paper are to use the National, Regional, and Forest policy and planning direction along with the physical, social, economic, environmental, and other constraints of the Jennie Lakes Wilderness to develop a strategy for the management of fire within this wilderness. The strategy will address the management of wildfires as well as prescribed fires with both planned and unplanned ignitions.

Statement of Purpose

The Regional Forester must approve the use of unplanned ignitions to meet resource management objectives. Approval is effected through fire management area plans or the Forest Land and Resource Management Plan. With the approval of the Sequoia National Forest Land and Resource Management Plan (LMP) on February 25, 1988, the Forest Supervisor is responsible for approving specific wilderness fire management objectives, standards, and guidelines in the Forest Fire Management

Action Plan (see FSM 5146 R-5 Supp 121-11/86). Implementation criteria will be included in individual Wilderness Implementation Plans.

This project paper will be presented to the Forest Supervisor and the Forest Management Team as a strategy for managing fire within the Jennie Lakes Wilderness. It is intended that this strategy become a part of the wilderness implementation plan for the Jennie Lakes Wilderness when it is prepared. Until then, after review and approval of the Forest Fire Management Action Plan by the Forest Supervisor, it will serve as an interim wilderness fire management plan.

General Introduction

The Sequoia National Forest is located in California at the southern end of the Sierra Nevada, extending from the Kings River on the north to the Mojave Desert on the south. From the eastern boundary on the Great Western Divide where it joins the Inyo National Forest, the Forest extends westerly to the foothills of the San Joaquin Valley. Elevations range from less than one thousand feet in the foothill region to over twelve thousand feet at the crest of the Sierras. As a result of the glacial action, the high country is dotted with many lakes and mountain meadows. The Forest contains a total of 1,178,618 acres, of which 1,122,960 acres are National Forest lands. About 24 percent of the Forest is wilderness (264,791 acres). The Forest is administered through five ranger districts: Hume Lake, Tule River, Hot Springs, Cannell Meadow, and Greenhorn.

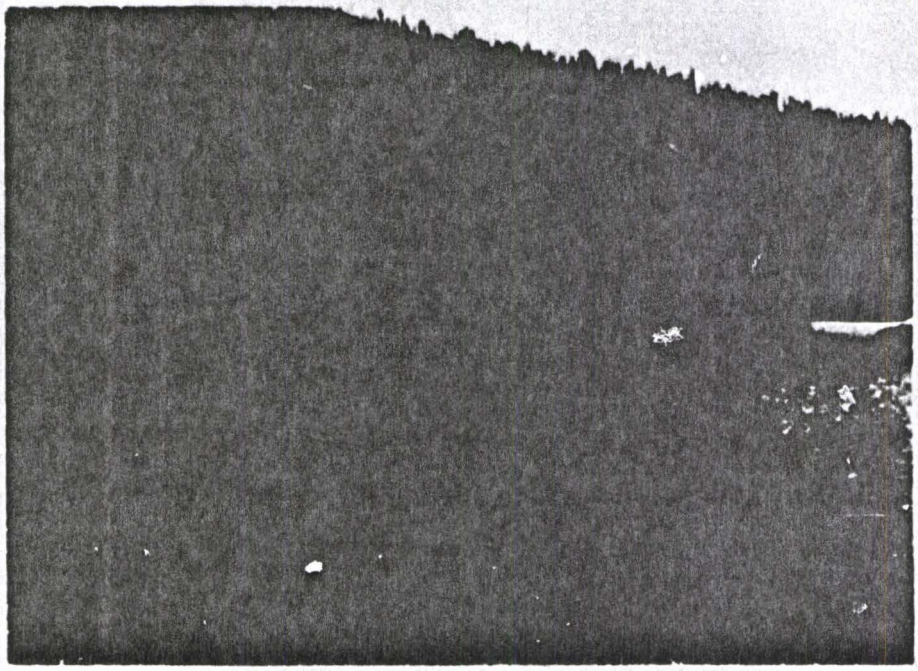
The Hume Lake Ranger District, with headquarters at Clingans Junction, is located 40 miles east of Fresno, California on State Route 180. A unique factor having a strong impact on the management of the District is the presence of Sequoia and Kings Canyon National Parks which border the District on the south and east sides, with Kings Canyon National Park actually projecting into the center of the District at Grant Grove.

The District extends 35 miles east-to-west, and 17 miles north-to-south. Gross acreage is 187,872 acres with 13,235 acres in private ownership. Elevations range from 950 feet at Pine Flat Reservoir on the western edge of the District to 11,081 feet at Hogback Peak in the Monarch Wilderness. Average annual precipitation varies from 18 inches in the foothills to 31 inches at Pinehurst (4,100 feet), to 43 inches at Grant Grove (6,600 feet), with most of the precipitation at Grant Grove and above occurring as snow. Vegetation varies from annual grass-oak woodland in the front country through mixed conifer and red fir/lodgepole pine stands at the middle and higher elevation ranges. At the highest elevations of the Monarch and Jennie Lake Wilderness Areas, dwarfed alpine plants grow during the very short summer season. The Kings Canyon, more than 7000 feet deep at its deepest point below Spanish Mountain, is a remarkable scenic and geologic phenomenon on the District. Its steep walls, varied colors, and dramatic appearance have impressed visitors since its discovery. Soils elsewhere on the District, as in the canyon, are mostly granitic in origin.

During the second half of the 19th century, drought and expansion of the California livestock and timber industries led to deeper and deeper penetrations of the Sierras by settlers. By the 1860's it was common practice to drive sheep and cattle into the mountains for use as summer range, and lumbering interests had discovered the Giant Sequoias growing within the 5,500 to 7,000 foot elevational zone on the west slope of the Sierras. Extensive logging and milling operations were developed and communities grew at Millwood, Converse, and Hume Lake during the period from 1880 to around 1920 (Johnston, 1974). Livestock use began in what is now the Jennie Lakes Wilderness in 1901 when Lee Lowery brought 250 head of cattle from Visalia to the Rowell Meadow area. By 1903 cattle use within this future wilderness area had increased to over 600 head during the three month summer grazing season (Dustin, 1984).

Public reaction against the indiscriminate early day logging of the Giant Sequoias and overgrazing of the high country by livestock led to the establishment of Sequoia and General Grant National Parks beginning in 1890 and the designation in 1893 of the Sierra Forest Reserve. The Hume Lake District was established in 1908 when the Sierra Forest Reserve was separated into what is now the Sierra and Sequoia National Forests. The early-day lumbering industry collapsed during the 1920's because of mill fires and the high costs associated with logging and transportation, and the mill communities decayed and vanished. The roads into the forest, built by the lumbermen, were used more and more by San Joaquin Valley recreationists seeking to escape the hot valley summers. Livestock grazing in the high country peaked about the same

time declining steadily through the early 1960's. Today grazing stands at about 15 percent of the 1919 level.



Weaver Lake

Jennie Lakes Wilderness

The 10,971 acre Jennie Lakes Wilderness was designated by Congress in the California Wilderness Act of 1984 (PL 98-425) which was signed by the President on September 28, 1984. The wilderness lies in the southeastern corner of the Hume Lake Ranger District and is adjacent to the backcountry wilderness of Sequoia and Kings Canyon National Parks. The two lakes, Jennie and Weaver, are popular destination points within the wilderness. There are 26 miles of trail within the Jennie Lakes Wilderness including a loop trail connecting both lakes. Four trails

connect with Sequoia and Kings Canyon National Parks and provide major trail access to the parks.

The Jennie Lakes Wilderness is a mixture of subalpine coniferous forests consisting of red fir, lodgepole pine, jeffrey pine, western white pine, and white fir associated with meadows, lakes, and granite outcrops. Elevations range from 6,800 feet to 10,365 feet at the summit of Mitchell Peak. Most of the wilderness lies above 8,000 feet in elevation.

Although lacking official wilderness designation until 1984, the Jennie Lakes "backcountry" has been managed for grazing and dispersed recreation throughout its history. The last 60 years have seen a gradual shift from livestock grazing to dispersed recreation use with grazing use declining, and hunting, fishing, and backpacking use increasing since about 1960. Developed recreation and timber management activities have focused on lower elevations elsewhere on the District.

The first attempt at formalizing the management of the Jennie Lakes area came after passage of the Multiple-Use Sustained Yield Act of 1960 (PL 86-517). The District Multiple Use Plan identified the Jennie Lakes as Crest Zone stressing the area's scenic beauty and emphasizing grazing and dispersed recreation activities. In 1967 the District began restricting off-highway vehicles to designated trails within the Jennie Lakes area to protect erodible granitic soils and sensitive meadows from damage.

The next step towards recognizing and managing the Jennie Lakes area came through unit planning attempts for the Hume Planning Unit in the mid-1970's. Four alternatives in the Unit Plan proposed different levels of management for the Jennie Lakes backcountry, all generally restricting off-highway vehicles and timber harvesting. With the passage of the National Forest Management Act of 1976 (PL 94-588), unit planning was dropped in favor of the Land Management Planning requirements under the new act. The Jennie Lakes area was classified as an inventoried roadless area during the Roadless Area Review and Evaluation processes (RARE I and RARE II) of the late 1970's, and remained in further planning status until becoming designated wilderness in 1984. Present recreational use is approximately 33,200 Recreation Visitor Days (RVD's) per year, with backpackers and equestrian users contributing the majority of use.

Fire Management Policy

Any discussion of the management of fire within the Jennie Lakes Wilderness must first focus at the national level. The Wilderness Act of 1964 (PL 88-577) gives clear conceptual directions for the management of the National Wilderness Preservation System:

> An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; . . .

National Forest objectives and policy governing fire management in wilderness is in Chapter 2320 of the Forest Service Manual (FSM). Section 2324.21 states the following:

> Objectives. The objectives of fire management in wilderness are to:
>
> 1. Permit lightning caused fires to play, as nearly as possible, their natural ecological role within wilderness.
>
> 2. Reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness.

Section 2324.22 goes on to outline National policy regarding the management of fire within wilderness:

> Policy (Condensed by the author).
>
> 1. Two types of prescribed fires may be approved for use within wilderness: those ignited by lightning and allowed to burn under prescribed conditions and those ignited by qualified Forest Service officers.
>
> 2. No Fire may be ignited or allowed to burn without documented, preplanned, specified conditions.
>
> 3. Specific objectives must be documented in a forest plan, or in either an interim wilderness management or fire management area plan.
>
> 4. All wildfires within wilderness must be suppressed.
>
> 5. Fire ignited by lightning may be permitted to burn if prescribed in an approved plan.
>
> 6. Forest Service managers may ignite a prescribed fire in wilderness to reduce unnatural buildups of fuels.
>
> 7. Prescribed fire may be used in wilderness only to meet wilderness fire management objectives.
>
> 8. Management ignited fires to achieve wilderness fire management objectives may not be used where lightning-caused fires can achieve the same objectives.

While Chapter 2324 of the Forest Service Manual governs both planned and unplanned prescribed fire management in wilderness, Chapter 5146

(R-5 Supplement 121-11/86) provides additional direction in implementing prescribed fire use in wilderness. Section 5146 states:

> . . .The Regional Forester shall approve specific objectives, standards and guidelines for the use of prescribed fire in the Land Management Plan. Forest Supervisors shall approve specific objectives, standards and guidelines in the Fire Management Action Plan and shall include implementation criteria in individual Wilderness Management Action Plans.

When a fire is declared a wildfire and suppression action is taken, the Forest Service recognizes the following suppression strategies:

> **Confine:** To limit fire spread within a predetermined area principally by use of natural or preconstructed barriers or environmental conditions. Suppression action may be minimal and limited to surveillance under appropriate conditions.
>
> **Contain:** To surround a fire, and any spot fires therefrom, with control lines as needed, which can reasonably be expected to check the fire's spread under prevailing and predicted conditions.
>
> **Control:** To complete the control line around a fire, and spot fires therefrom, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions.

The Forest Land and Resource Management Plan (LMP) for the Sequoia National Forest identifies wilderness management as one of the principal public issues and management concerns. The Plan states prescribed fire will be used in all wilderness areas to enhance wilderness values by maintaining long-term plant diversity. In the analysis of the management situation, the Plan also acknowledges fire suppression has, to a large extent, excluded fire from a natural role in wilderness. It further suggests that prescribed fire, using either planned or natural ignitions, could be used to improve this condition and maintain long-term vegetative diversity. Forest-wide standards and

guidelines, contained in the management direction of the Forest Plan, additionally provide the following direction for wilderness fire:

> Use prescribed fire to enhance wilderness values (e.g; long-term plant diversity) in all wildernesses in locations and under conditions described in wilderness management plans.
>
> Use a "confine" or "contain" suppression strategy for wildfire when public safety will not be compromised, adjacent resources can be protected, and other management constraints (air quality, watershed, etc.) can be met. Apply "control" strategy to all other wildfires.
>
> Utilize "confinement" as a suppression strategy when the potential fire size will generally not exceed 100 acres.

This direction is carried forth in the management area prescription (WF4) for the Jennie Lakes Wilderness which emphasizes wilderness with the natural role of fire. In order to implement the management area prescription for the wilderness, preplanned criteria for wildfire suppression addressing confinement, containment, and control strategies must be developed and incorporated into the overall fire management strategy.

CHAPTER TWO

LITERATURE REVIEW

Wilderness Fire Management

There seems to be much confusion among land managers and the public alike when it comes to describing what is meant by "wilderness fire management." Wilderness fire management is simply the deliberate use of fire to achieve stated wilderness objectives in a naturally fire-dependent ecosystem (Heinselman, 1978). Management fires can be either naturally caused (lightning) or planned ignitions by managers. All fires not meeting preplanned criteria (this includes all person-caused fires except deliberately ignited management fires) are wildfires and should be suppressed. Not only is it unacceptable to allow carelessness to dictate wilderness fire effects, but such fires also tend to have unnatural location patterns; and may involve violations of the law, damage claims, and other legal actions.

Wilderness fire management is not a "let-burn" policy, nor is it solely a natural fire program. "Let burn" is an unfortunate term used by many to describe various natural fire programs. In reality, a wilderness

fire program is built around a complex series of prescriptions based on biological, historical, climatic, and economic variables. It must meet sound wilderness management objectives, be ecologically and economically sound, and be professionally prescribed and carried out (Lotan, 1977). To label a wilderness fire program as "let-burn" does a great disservice to the concept of wilderness fire management.

Historical Prospective

Before developing a strategy for managing fire in the Jennie Lakes Wilderness, it is important to pause and reflect on the evolution of the Forest Service's current policy. The story really begins with a number of events occurring around 1910. Taft had replaced Roosevelt as President, Pinchot had been fired for insubordination, and the Forest Service was being heavily criticized about its fire program (Pyne, 1982). Over five million acres of western forests burned in 1910, with large losses of property and lives. Public and Congressional support for a strong and efficient fire control organization within the agency came as a result of these catastrophic fires. As stated by Henry Graves in 1910, "the first measure necessary for the successful practice of forestry is protection from forest fires."

From 1910 until the mid 1930's the policy of the Forest Service was to use current appraisals of forest value as the basis for determining the effort to be put into fire control operations (Lotan, 1977). Fire control was concentrated on high-value front country lands. In 1935 the agency sought to extend systematic fire protection into new, more

remote lands, not only inaccessible areas of the National Forest backcountry, but cutover lands in the South and Lake States (Pyne, 1982). The Chief of the Forest Service implemented what is commonly called the "10 a.m. Fire Suppression Policy." The policy was to pursue an aggressive stance, dispatching sufficient forces to control a fire by 10 a.m. the next day. Its intent was to simplify fire suppression decisions on the ground.

The official stance was not universally accepted, however. In 1942 fire researcher Harry T. Gisborne rated the 10 a.m. policy as either a milestone or a tombstone in his lecture on the previous 35 years of progress in fire control and fire research (Gisborne, 1942):

> If and when that policy becomes clearly recognized as a temporary expedient, I believe that it will rate a milepost. If, however, it has become or ever does become the death knell of all previous objectives based on damage, then it rates a tombstone executed in the blackest of black granite.

One of Gisborne's criticisms was that the 10 a.m. policy specified the same standard of protection for all areas, whether timber, sagebrush, or "goat rocks." Recognizing not all lands should have the same standards for protection, a National Fire Policy meeting in 1972 authorized exceptions to the 10 a.m. policy (Mutch, 1977). Also in 1972, the Forest Service began permitting prescribed fires originating from unplanned ignitions, mainly lightning, to burn within some designated wilderness areas (Towle, 1983). Four years earlier the National Park Service began allowing lightning fires to burn in certain sections of Sequoia and Kings Canyon National Parks (Kilgore and Briggs, 1972). Economic constraints had become important in ways that had not been true for nearly 50 years. The least cost plus loss theory

of the pre-1935 era was revived, though redesigned to read least cost plus "net value change" in recognition of the potential benefits possible through prescribed burning. New principles subordinating fire management to land management, and fire plans to Forest Plans resulted in a new policy in 1978.

Visitor Attitudes

While wilderness managers and researchers generally acknowledge the validity of prescribed fires in wilderness areas, what does the public think of the idea? McCool and Stankey (1986) suggest such a question is important because the public may be directly affected through closures of areas and trails, decreased visibility and increased air pollution due to smoke during a fire, and indirectly through changes in the landscape and resulting effects on wildlife populations.

Providing information about fire's natural role and effects is an important step in establishing public support (McCool and Stankey, 1986). To be effective, public information should be available at three levels: the fire site, the wilderness entry point, and within the community (Mackay, 1987). In the local area, the National Park Service has gained recognition and support for its fire management program in Sequoia and Kings Canyon National Parks through an active interpretive program. A formal review of the fire management program for sequoia-mixed conifer forests of Yosemite, Sequoia and Kings Canyon National Parks acknowledged this fact by stating, "... public perceptions and understanding of the fire management program are

determined in large part by interpretive presentations" (Christensen et al, 1987).

In 1971, a study of visitors to the Selway-Bitterroot Wilderness showed knowledge of fire effects was positively associated with attitudes toward fire management (Stankey, 1976). Most respondents favored some type of fire suppression policy rather than a more liberal policy allowing fire to burn under certain conditions. Levels of knowledge were generally quite low, the average correct score on an 11-item fire effects test was only 53 percent. Since the time of the Stankey study, the Forest Service and the National Park Service, as well as other agencies, have expended considerable effort in providing information to the public about the role of fire in shaping the wilderness landscape. One objective of this effort has been to increase the level of recognition and public acceptance of the natural role of fire in wilderness areas (McCool and Stankey, 1986).

The Wilderness Society became the first national organization to adopt a policy statement on wilderness fire management (Bolle, 1983). The statement (issued in 1982) reads in part:

> The goal is free play of natural forces, not any particular static condition. For example, the Wilderness Society generally supports a policy of allowing natural fires to play their ecological role in wilderness, with due regard for public health, safety, and welfare in the surrounding non-wilderness areas.

A review of the literature also suggests public acceptance of fire as a management tool in wilderness is growing. Taylor and Daniel (1984) reported respondents considered burned forests visually acceptable under certain conditions, particularly when lightly burned. Cortner

and others (1984) found considerable support for policies favoring prescribed fire in the Tucson, Arizona area. Stine (1986) surveyed users of three wilderness areas (Selway-Bitterroot, Nez Perce N.F.; Bob Marshall, Flathead N.F.; and the River of No Return, Salmon N.F. and Challis N.F.) and found that user's recreational experiences were not substantially reduced because of the effect of fire. He also found there was strong support for wilderness fire policies, and users were very knowledgeable concerning fires' effects on natural resources.

McCool and Stankey (1986) compared the results of the previously mentioned 1971 study by Stankey with the results of a similar questionaire and quiz completed by visitors to the Selway-Bitterroot Wilderness in 1984. In 1971, the majority (56 percent) of the users questioned favored a fire suppression approach. The 1984 study indicated only 17 percent supported a suppression policy, and only five percent favored complete suppression. It is also interesting to note only a small percentage in either year supported a policy of completely letting all fires burn, suggesting visitors remain unwilling to support extreme positions. Over 70 percent of the 1984 sample, however, did support a policy of allowing fires to burn in wilderness. These studies suggest significant changes in visitor knowledge and attitudes toward fire suppression policies during the last decade.

Planned and Unplanned Ignitions

The Forest Service's prescribed fire policy was outlined in Chapter One. Generally, the policy recognizes the use of planned and unplanned

ignitions to accomplish wilderness management objectives. With planned ignitions, the manager chooses location, timing, intensity, and size for each fire. Unplanned ignitions are naturally occurring (lightning) or human caused. Towle (1983) summarized the importance of the use of planned ignitions in Forest Service wilderness management when he wrote:

> We now know that we cannot depend totally upon natural sources of ignition because of problems with location, frequency, timing, adverse air quality impacts, risks, and loss. Many wilderness areas simply do not have the natural fire frequency needed to reverse the conditions resulting from numerous years of fire suppression.
>
> Air quality impacts may place an even more serious limitation on the use of unplanned ignitions in some wilderness areas. Planned ignitions may avoid this problem if they are designed to burn for 1 or 2 days during periods of good vertical mixing and high-elevation transport winds.

However, Towle adds a caution by explaining that we must be sure our use of fire is based on past fire history, and on the legislative intent for each individual wilderness, and must support wilderness management objectives. It would seem managed lightning fires are preferred, with planned ignitions used primarily near the wilderness boundary and in high visitor-use areas (Heinselman, 1978). Arnold Bolle, expressing the views of the Wilderness Society, adds the following (Bolle, 1983):

> We need to be especially careful with scheduled ignition (prescribed fire). ... Although unscheduled ignitions can generally be allowed to burn in fire-dependent ecosystems, scheduled fires need to be far more carefully and specifically managed and, ...such management requires a precise definition of natural forests.

In the 1984 study of visitor attitudes conducted by McCool and Stankey (1986) respondents were asked if they believed using planned ignitions in some wilderness areas would be detrimental or beneficial. Nearly 50

percent felt planned fires would be beneficial; slightly over a third indicated they were "unsure"; and 16 percent felt such fires would be detrimental. Those who felt such a fire policy would be detrimental indicated the importance of maintaining natural processes through a natural fire policy was a concern. Individuals who were unsure of their feelings stated they needed more information about the conditions which would guide planned ignitions, and also wilderness areas should be places for natural processes. It seems those who oppose or are unsure about planned ignitions in wilderness are concerned about the intrusion of such a policy into the operation of natural processes.

How important is the ignition source in determining whether fire is natural? The basic issue is whether an ignited fire: (1) burns within the range (and frequency distribution) of intensities and frequencies, (2) achieves the same range of sizes, and (3) burns at the same seasons in which fires burned during the past 15,000 years when the present vegetation mosiac and forest structure were developing (Kilgore, 1983). It does not seem to matter if the ignition source is planned or unplanned, so long as the effects it achieves are the same or simulate the same range of effects that have occurred in the past. Some of the principal problems are the difficulty in defining fire frequency, and also the intended objectives to be accomplished with planned ignitions (Daniels and Mason, 1983).

In pondering the question of planned ignitions in wilderness, Van Wagner (1983) concluded:

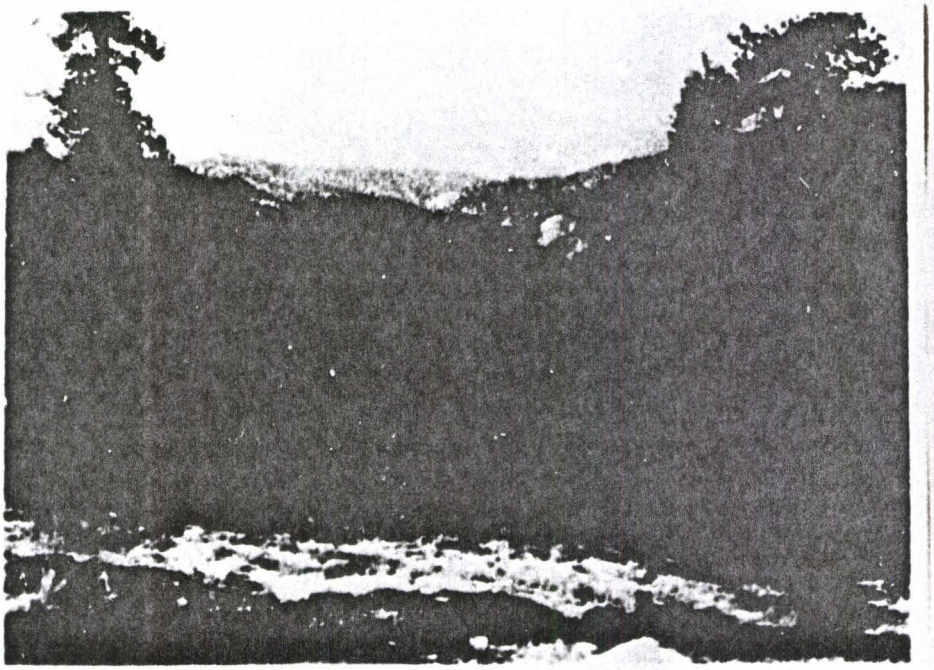
> It seems that, whether we like it or not, we are about to take over Nature's ancient role in the management of fire dependent ecosystems in certain areas called "wilderness." I only suppose that, if Nature is really conscious, she must be vastly amused at the trouble we have in duplicating something she has been doing so easily for untold thousands of years.

Vegetative Distribution and Fire Regimes

The vegetative structure and composition of the Jennie Lakes Wilderness is a function of the climate and fire regime (fire frequency and fire intensity). The fire regime, in turn, depends upon the area's vegetative structure, topography and climate (Kilgore, 1978). The dominant vegetation within the Jennie Lakes Wilderness is red fir (Abies magnifica) and jeffrey pine (Pinus jeffreyi) to an elevation of approximately 8400 feet, and lodgepole pine (Pinus contorta ssp. murrayana) and western white pine (Pinus monticola) at higher elevations.

Red fir forests are generally even-aged very dense fully stocked stands with complete crown closure, and with few shrubs or young trees in the understory. It grows in areas characterized by long winters with a heavy snowpack, and short dry summers (USDA, 1965). Regeneration becomes established in small openings created by the death of individual trees or in larger openings resulting from insect, disease or fire mortality. Within the red fir forest, lodgepole pine dominates near streams, meadows, benches or other areas with shallow water tables or where fires have killed the firs and created a mineral seedbed adjacent to a pine seed source. Because red fir grows well under pine, and being a truly climatic climax plant association, it will eventually

(after 100-200 years) overtop and kill the shorter and less tolerant lodgepole pines (Rundel et al, 1977; USDA, 1965).



Red fir - Boulder Creek Drainage

Lodgepole pine and western white pine dominate the zone above the red fir forest. Stands are quite open with sparse litter, shrub or understory herbaceous vegetation. Cones of the Sierran lodgepole open at maturity, whereas the cones of Rocky Mountain lodgepole are serotinous (USDA, 1965). Unlike the lodgepole pine in the Rocky Mountains, the Sierran lodgepole pine forests typically appear to have an uneven-sized structure characteristic of persistent populations that experience continuous, or perhaps intermittent, understory regeneration (Parker, 1986).

The fire regime within the Jennie Lakes Wilderness is one of infrequent, low-intensity surface fires. When they occur, they spread slowly or not at all because ground fuels rarely exceed 50 percent, and there are many natural barriers to fire spread such as rocky, barren areas, tallis slopes, streams, draws and meadows (Kilgore, 1978). Whereas crown fires are an important force in maintaining even-aged lodgepole pine forests in the Rocky Mountains, accumulation of fuels in the forest canopy of the Sierra Nevada lodgepole stands is low, and crown fires are virtually absent. Fire history records from Yosemite National Park since the inception of fire-record keeping in 1931, show no crown fires have occurred in the lodgepole/subalpine forest since that time, and less than one percent of the area in that vegetation type has been burned by surface fires (Parker, 1986).

Fires in the subalpine forests of Sequoia and Kings National Parks adjacent to the Jennie Lakes Wilderness burn with generally low intensity, with occasional torching of individual trees or groups of trees, and with no evidence of large crown fires (Show and Kotok, 1924; Kilgore, 1971; Weaver, 1974). There appears not to have been sufficient fuel buildup in these subalpine forests during the past 60 years of fire suppression to alter the natural fire regime (Bancroft et al, 1983). These fires are generally less than an acre in size and only burn a few days. Sequoia and Kings Canyon National Parks have never recorded a high intensity crown fire in lodgepole pine in almost 100 years of documented fire history (Nichols, 1987). A half century of fire history elsewhere in the Sierras suggests that crown fires are rare in the subalpine zone (Parker, 1986). National Park research in

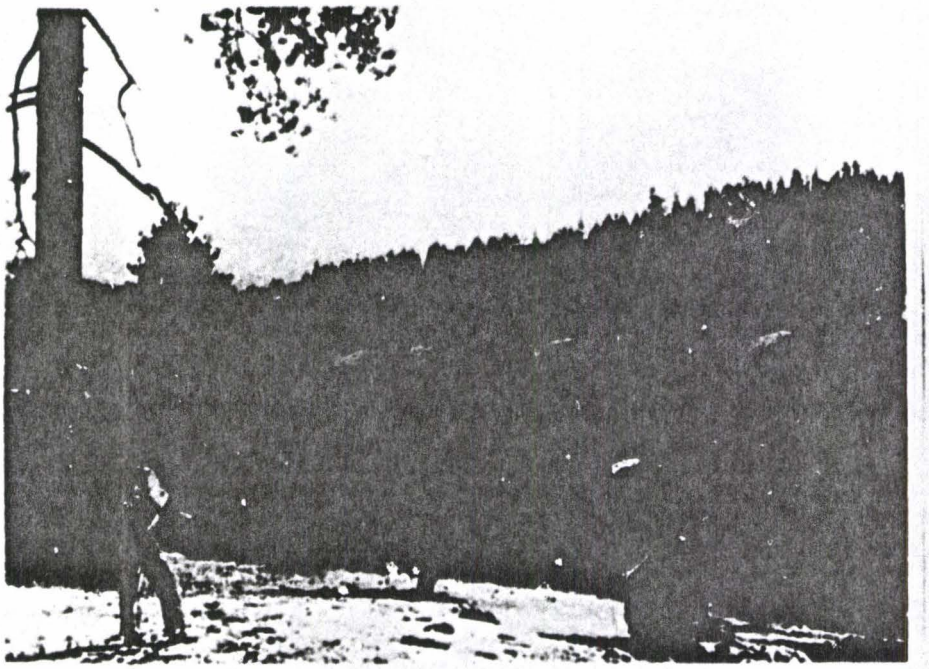
areas adjacent to the Jennie Lakes Wilderness, has shown that several fires which have burned considerable acreage over several months' time have not burned intensely over large acreage or been a problem to control (van Wagtendonk, 1977; Parsons, 1977). Many of these fires were in the heavier fuels of the ponderosa pine/jeffrey pine vegetative type of Sugarloaf Valley in Kings Canyon National Park. However, drought conditions in Yosemite National Park in 1987 produced conditions where some high intensity fires occurred in locations where they had not been previously recorded (Nichols, 1987).

Kilgore (1971) studied the effects of a management fire burning in red fir (8400 feet to 9800 feet elevation) in the Rattlesnake Creek drainage of Kings Canyon National Park. Based on this study, and evidence from natural fires in red fir forests he concluded:

> ... fire suppression seems to be of questionable value in this near-climax vegetation type unless there is danger to human life and property. If natural environmental conditions are to be maintained in national parks and wilderness, it would seem desirable to allow most lightning fires in red fir forests to burn without suppression.

Despite the low intensities and frequencies, fire is still important to the vegetation of the Jennie Lakes Wilderness. In fact, the historical record may underestimate the importance of fire in this vegetation type since it reflects an era of aggressive fire suppression (Parker, 1986). The invasion of many mountain meadows by lodgepole pine, for example, may be a direct result of the elimination of disturbances such as natural and Indian-caused fires which controlled regeneration in meadows where it proves highly successful if not suppressed (Rundel et al, 1977). A study by Vankat (1970) in nearby Sequoia National Park has shown lodgepole density and cover has increased in the last 50

years. The periodic fires which are now totally suppressed within the Jennie Lakes Wilderness, have prevented the thinning of regeneration and created unnatural fuel accumulations. Continued exclusion of fire may lead to degradation of the community or succession and dominance by red fir (Rundel et al, 1977).



Red fir and jeffery pine - northwest of J. O. Pass

Ai Quality Standards and Regulations

Congress passed the Clean Air Act in 1967 and amendments to the Act in 1972 and 1977. The Act established National Ambient Air Quality Standards and gave the States primary responsibility for air quality management. Other provisions of the Act provide for the Prevention of Significant Deterioration (PSD) of air quality. The basic intent of

this provision is to limit degradation of air quality particularly in those areas of the country where the air quality is much better than standards (Haddow, 1983). This provision also designates certain National Parks and wilderness areas in existence on August 7, 1977 as "Class I areas." The PSD provisions of the Act apply only to major stationary sources of air pollution, such as power plants, and do not include prescribed fire which is defined as a temporary source.

Protection of visibility in Class I areas is, however, an important aspect of the PSD section of the Clean Air Act. The Act explicitly set a broad national goal to prevent any future impairment of visibility in Class I areas, and to remedy any existing impairment from human-caused air pollution. Although prescribed fire is defined as a temporary source of air pollution, States may regulate prescribed burning, both in and out of Class I areas, to meet visibility goals (Haddow, 1983). Haddow (1983) further states:

> The objective in managing visibility within wilderness is to provide the opportunity for a natural visual experience. The key words are "natural" and "experience." In this context, natural is defined as unimpacted by humans; therefore, the objective is not necessarily to provide for visual enjoyment, which is a purely personal matter. If smoke from fire is a natural part of the wilderness, the wilderness manager should allow this visual opportunity.

It must be recognized, however, that viewing the scenery through "clean fresh air" has been considered an important wilderness attribute by many wilderness users (Haddow and Blankenship, 1983).

The only Class I area within the Sequoia National Forest is the Dome Land Wilderness (56 air miles southeast of the Jennie Lakes Wilderness). Sequoia and Kings Canyon National Parks (adjacent to the

Jennie Lakes Wilderness) are Class I areas. Smoke management practices within Sequoia and Kings Canyon National Parks for prescribed fires from unplanned ignitions are unaffected by the Class I designation (except for public safety and health considerations) because these fires are not "human-caused" sources of air pollution as cited in the PSD section of the Clean Air Act (Nichols, 1987). This interpretation may change due to recent legislation enacted by the State of California. On July 23, 1987 the Governor signed Senate Bill 562 (Stats. 1987, ch 211) which became effective January 1, 1988. This bill added a new subsection to the definition of agricultural burning, including prescribed burning "to achieve specific objectives on lands selected in advance of that application," and adding "natural or accidential" ignition sources to the definition of prescribed fire (Jennings, 1987).

The Sequoia Land and Resource Management Plan identifies the following management direction for air quality and the management of wilderness fire:

> Conduct prescribed burning activities in accordance with Air Pollution Control District regulations and with proper prescriptions to assure good smoke management.
>
> Coordinate management activities that potentially impact the air quality of adjacent Class I areas and military facilities with the responsible agency (i.e., Sequoia and Kings Canyon National Parks, Edwards Air Force Base, and China Lake Naval Weapons Center).

Wilderness Fire Management Planning

Prior to developing a strategy for managing fire within the Jennie Lakes Wilderness, it will be helpful to review the objectives and

content of typical wilderness fire management plans. All wilderness fire management plans have basically the same objective: To let fire more nearly play its natural role within the wilderness. There is a tendency to associate wilderness fire with targets such as range or wildlife habitat improvement (Kovalicky, 1983). Wilderness fire planning and execution allows a return to natural conditions. Range or wildlife habitat improvement is a secondary benefit, not a major objective.

The purpose of wilderness fire management planning is to produce a guide for all fire management actions within the wilderness, including response to wildfire and the conduct of prescribed fires. Fischer (1983) separated typical wilderness fire management planning into six essential elements: (1) describing fire and ecosystem interactions, (2) describing special resource and use considerations, (3) defining fire management objectives, (4) delineating fire management units and zones, (5) developing fire management prescriptions, and (6) devising a fire management plan. Heinselman (1978) assembled a similar listing of planning elements from plans and guidelines of the Forest Service and National Park Service. His list included: (1) objectives, (2) descriptions and maps of landscape units, (3) fire history and natural fire regime, (4) potential impacts outside the wilderness, (5) an action plan including guiding principles and prescriptions, (6) line officer responsibility, (7) cooperative arrangements with other agencies, and (8) information programs.

Defining specific fire management objectives is the critical element in wilderness fire management. These objectives should flow from the land management plan for the wilderness (Fischer, 1983). Plans should also contain clear language to the effect that all fires will be suppressed if they jeopardize human life, or if they exceed prescriptions or threaten to escape from the wilderness (Heinselman, 1978).

The fire management prescription represents the culmination of fire management planning. The prescription is a written direction for dealing with the threat, occurrence, and use of fire. The prescription must include necessary direction for the detection, prevention, and suppression of fires as well as for the use of fire. Fire management prescriptions are usually written for a fire management unit or zone, however, a single prescription could conceivably apply to an entire wilderness (Fischer, 1978). Fire management prescriptions are not complete until all constraints are identified, defined, and incorportated into the prescription. Fischer (1978) wrote:

> Common constraints that often apply to wilderness fire management prescriptions have to do with human-caused fires (agency policy often prohibits their use as prescribed fires); scheduled prescribed fires (often prohibited in wilderness); level of fire activity (prescribed fires are often shut down during periods of high fire activity); and crew availability (fire use is often tied to the availability of fire crews to handle possible escapes).

To be effective, a wilderness fire management plan must also include monitoring of individual fires to insure they continue to burn within prescription, and to make adjustments if conditions change. Plans must also be monitored to evaluate their effectiveness in achieving the stated goals and objectives (Bancroft et al, 1983).

CHAPTER THREE

METHODOLOGY

Introduction

The literature review provided critical research and guidelines which will assist in developing a fire management strategy for the Jennie Lakes Wilderness. Much of the research contained in the literature cited in this paper can be directly related to the Jennie Lakes Wilderness because of the proximity of Sequoia and Kings Canyon National Parks; and the considerable research associated with the last 20 years of their natural fire program. This chapter takes the process a step farther by outlining data collection methods, and discussing how that data will be treated in the development of a fire management strategy for the Jennie Lakes Wilderness.

Collection of Data

Five procedures were used to collect data: (1) review of Forest Service manuals and handbooks, public laws, and management plans; (2) literature search through WESTFORNET and other sources; (3) field review by the author; (4) review of historical records, and the Sequoia

National Forest LMP data base; and (5) discussions, interviews, and correspondence with agency personnel and other individuals.

Review of Forest Service manuals and handbooks, public laws, and management plans.

The first step towards developing a strategy was to identify those documents currently available on the District which provide guidance and direction in the management of fire within the Jennie Lakes Wilderness. The following abbreviated bibliography of District source documents provided the base of information necessary to set the strategy direction and to implement a literature search.:

1. Forest Service Manual:
   Chapter 2320 Wilderness Management
   Chapter 5120 Presuppression Management
   Chapter 5130 Fire Suppression
   Chapter 5140 Prescribed Fire
   Chapter 5150 Fuel Management
2. Forest Service Handbooks:
   FSH 2309.19 Wilderness Management
   FSH 5109.19 Fire Management Analysis and Planning
   FSH 6509.11K Service-wide Finance and Accounting
3. Public Laws of the United States:
   Multiple Use-Sustained Yield Act of 1960 (PL 86-517)
   Wilderness Act of 1964 (PL 88-577)
   National Forest Management Act of 1976 (PL 94-588)

Clean Air Act Amendments of 1977 (PL 95-95)

California Wilderness Act of 1984 (PL 98-425)

4. Sequoia National Forest Management Plans:

   Hume Lake District Multiple Use Plan

   Hume Planning Unit- Management Alternatives

   Sequoia National Forest Land Management Plan

5. California Mobilization Guide (MACS 410-1)

6. Horse Corral Grazing Allotment Management Plan

7. Wilderness Fire Management Plans:

   Teton Wilderness

   North Fork John Day Wilderness (Draft)

   Great Bear - Bob Marshall Wilderness (Phase II)

   Selway-Bitterroot Wilderness

   Sierra National Forest Wilderness Areas (Interim)

   Scapegoat Wilderness and portion Bob Marshall Wilderness

8. Fire Management Plan for Sequoia and Kings Canyon Parks.

Literature search through WESTFORNET and other sources.

A computer based literature search through WESTFORNET was instigated in early October 1987. The original request identified the following "key words:" WILDERNESS FIRE MANAGEMENT, FIRE MANAGEMENT PLANNING, NATURAL FIRE, INDIAN BURNING, UNNATURAL FIRE BUILDUP, LIGHTNING vs HUMAN IGNITION, AIR QUALITY, FIRE ECONOMICS, PRESCRIBED FIRE IN WILDERNESS, HIGH INTENSITY FIRE IN WILDERNESS, FIRE MANAGEMENT POLICY, VISITOR ATTITUDES, and WILDERNESS POLICY. A computerized listing of 100 articles and publications based on

the search request produced only three references pertinent to wilderness fire management. A second literature search implemented after discussing the situation with Dennis Galvin of WESTFORNET produced a listing of 98 references. Many of the references were repeated from the original listing, and again, very few were pertinent to wilderness fire management. During a second telephone conversation with Dennis Galvin, he cited three possible reasons for such an unresponsive literature search: (1) WESTFORNET no longer has access to the FIREBASE data base due to funding constraints in Aviation and Fire Management, (2) no data base is maintained from publications of WESTFORNET's Monthly Alert program (no funding or staffing available), and (3) publications related to fire management are not generally well indexed by subject matter.

A computer data base on the Data General system containing a listing of all project papers completed for the Clemson and Utah State Outdoor Recreation Management Short Courses through 1986 was searched for subjects related to wilderness fire management. Two project papers were identified and microfiche copies of these papers were retrieved from the Regional Office in San Francisco.

The author has collected several dozen articles and publications over the last 10 years relating to wilderness fire management. Most of these were collected from the WESTFORNET monthly alert program. Bibliographies of these publications were researched for articles and publications not already collected by the author.

Many of these additional references were obtained from friends and associates within the Forest Service and the National Park Service. It was through this more localized source that most of the literature cited in this paper was obtained.

Field review by the author.

In October and November 1987, portions of the Jennie Lakes Wilderness were field checked by the author. The purpose of this survey was to verify the age and size class information for the lodgepole pine component, and to photograph areas within the wilderness. No compartment inventory analysis exists for the Jennie Lakes Wilderness. Much of the literature discussed even-age stands of lodgepole pine (especially in the Rocky Mountains), other publications referenced a "Sierran" lodgepole pine type with stands exhibiting all age classes. Using 1982 series aerial photos, six 1/5 acre sample plots were located within lodgepole pine stands in the Jennie Lakes Wilderness. No attempt was made to conduct a statistically valid random sample. Sampling was biased by the author selecting stands typical of the lodgepole pine stands within the Jennie Lakes Wilderness based on local experience. For each sample plot, each tree was measured for diameter, and a core was taken with an increment borer to establish age.

Review of historical records and Forest LMP data base.

It was important to establish the fire history and the vegetative distribution of the Jennie Lakes Wilderness. District historical fire records dating to 1940 were researched. Fires within the Jennie Lakes Wilderness were tabulated for each decade by size class, and whether caused by lightning or humans. Fire history records for Sequoia and Kings Canyon National Parks were researched with the assistance of Tom Nichols, Environmental Specialist for the two national parks. Individual fire records for the National Park Service backcountry adjacent to the Jennie Lakes Wilderness date from 1920. These data were compared to the fire frequency and size class information obtained for the Jennie Lakes Wilderness from Forest Service records. These comparisons were made on the basis of similarities within homogeneous vegetative types. No attempt was made to conduct a statistical comparison.

Vegetation types for the Jennie Lakes Wilderness were determined through a query of the Sequoia National Forest's LMP data base. CALVEG labels for vegetation and non-vegetation types were sorted by slope class (less than or greater than 40 percent), and the number of acres for each CALVEG label were recovered from the data base. Appendix B contains an explanation of the CALVEG classification system.

Personal discussions, interviews, and correspondence.

In order to assess areas of concern and potential controversy, interviews were conducted in early October 1987 with Jerry Gelock, Sequoia National Forest Recreation Officer/Land Management Planner; and Lee Belau, Sequoia National Forest Fire Management Officer; along with Bruce Waldron, Hume Lake District Ranger. The following week, telephone interviews with the following individuals completed the first scoping of a fire management strategy for the Jennie Lakes Wilderness:

Martin Keast, Tulare County Air Pollution Control District
Jose Martinez, Fresno County Air Pollution Control District
Tom Nichols, Sequoia and Kings Canyon National Parks
John Rasmussen, Tehipite Chapter- Sierra Club

In early December 1987, scoping letters were mailed to 26 individuals representing public agencies, grazing permittees, outfitter-guides, concessionaires, environmental groups, stock users, sportsmen groups, and the media. Eleven recipients responded by return mail, one outfitter-guide was interviewed at the District office, and four agency personnel telephoned for additional information and discussions.

Correspondence and discussions with these individuals provided additional clarity and objectivity during the development of the fire management strategy for the Jennie Lakes Wilderness. These individuals and organizations were an excellent source of

information because most have been actively associated with the Jennie Lakes Wilderness or the adjacent National Forest or National Park lands.

Treatment of Data

Each of the five procedures utilized in the collection of data provided valuable insight regarding policy and procedures, pertinent research, historical and fire regime information, and individual and public agency issues, concerns, and perceptions about wilderness fire management in the Jennie Lakes Wilderness. Chapters One and Two discussed in detail the areas of policy and procedures, as well as current research findings.

Chapter Four will discuss and analyze the data collected specific to the Jennie Lakes Wilderness. This discussion will include fire history, fire regime and vegetative classification, and the issues, concerns, and perceptions of the individuals and agencies responding to the scoping letter and other public contacts.

CHAPTER FOUR

DISCUSSION

Fire History

District fire history records support the classification of the Jennie Lakes Wilderness into an infrequent, low intensity surface fire regime. Since 1940, District records indicate a total of 104 fires occurred. Seventy-two percent were caused by lightning. All but five fires were Size Class A fires (up to 1/4 acre). These five exceptions were Size Class B fires (0.26 to 9.9 acres), and all were one acre or less in size. The 1940-1949 decade had only twelve recorded fires. During this period, because of manpower commitments to World War II, many fires in the Sierra backcountry were unrecorded by both the Forest Service and the National Park Service. Fire control efforts were concentrated in the much higher value front-country. During 1987, the most explosive year in California history, no fires occurred in the Jennie Lakes Wilderness. Table 1 contains historical fire information for the Jennie Lakes Wilderness compiled from District records.

Table 1. Size Class and Fire Cause- Jennie Lakes Wilderness 1940-87.

Decade	Lightning		Human		Total
	A	B	A	B	
1940-1949	4	1	6	1	12
1950-1959	19	1	2	0	22
1960-1969	21	0	9	0	30
1970-1979	20	0	8	1	29
1980-1987	8	1	2	0	11
Totals	72	3	27	2	104

Fire history records for Sequoia and Kings Canyon National Parks, dating from 1920, show the same pattern of Class A and Class B size fires in the backcountry adjacent to the Jennie Lakes Wilderness. The single exception is a 28.8 acre fire caused by lightning on the north slope of Mitchell Peak in 1964.

As one would expect, the historical record indicates human caused fires tend to be grouped around popular overnight destinations such as Weaver Lake, Jennie Lake, and Rowell Meadow. Lightning fires are randomly scattered throughout the Jennie Lakes Wilderness. Appendix C displays fire location information for each decade beginning in 1940.

Fire Regime and Vegetative Classification

As discussed in Chapter Two, vegetative structure and composition of the Jennie Lakes Wilderness is a function of climate and fire regime. The fire regime is dictated by the frequency with which fires occur, and the intensity of the burns. Using the Sequoia National Forest LMP data base, and CALVEG labels, Jennie Lakes Wilderness attributes were

obtained. Much of the information contained in the LMP data base came from vegetative typing completed from 1976 aerial photographs.

Almost seventy-five percent of the Jennie Lakes Wilderness consists of stands of red fir and lodgepole pine. Red fir and lodgepole pine occur in pure stands within the wilderness, although over most of the range they occur together in mixed stands. Lodgepole pines samples by the author on six 1/5 acre plots confirmed the lodgepole stands of the Jennie Lakes Wilderness are uneven-aged stands. Measured trees ranged from 15 to 405 years old, and from four inches to 50 inches in diameter. White fir is found at elevations below 7,500 feet within the wilderness, and confined to three percent of the total acreage. Jeffrey pine generally is found in open areas with shallow soils and sparse stocking. Approximately nine percent of the wilderness is predominately jeffrey pine, although it too is found in mixed stands with red fir and lodgepole pine. Montane chaparral covers slightly over four percent of the Jennie Lakes Wilderness. Montane chaparral occurs in higher altitudes and is a ground-hugging, compact form of chaparral, seldom exceeding six feet in height and usually less than three feet. The development of montane chaparral is slowed by cold temperatures, snow cover, and short growing seasons.

One of the factors affecting fire intensity is slope. All things being equal, a fire will burn with greater intensity as slopes become steeper because of preheating of upslope fuels. Less than 13 percent of the Jennie Lakes Wilderness has slopes steeper than 40 percent, and thus slope generally plays a minor role within the wilderness as a fire

intensity factor. Table 2 displays vegetative typing (CALVEG labels) and slope classes for the Jennie Lakes Wilderness.

Table 2. Vegetative Types and Slope Classes

CALVEG label	Acres Within Wilderness Boundary <40%	>40%	Total	% Total Area
red fir	6,034	1,261	7,295	66.5
jeffrey pine	868	105	973	8.9
lodgepole pine	724	0	724	6.6
white fir	302	22	324	3.0
montane chaparral	461	0	461	4.2
barren	1,060	0	1,060	9.7
meadows	93	0	93	0.8
water	41	0	41	0.3
Totals	9,583	1,388	10,971	100.0

Public Issues, Concerns, and Perceptions

Early scoping during the development of a fire management strategy for the Jennie Lakes Wilderness indicated air quality might be a major concern. During telephone conversations with Jose Martinez, Fresno County Air Pollution Control District; Martin Keast, Tulare County Air Pollution Control District; and Tom Nichols, Sequoia and Kings Canyon National Parks; it was suggested to the author air quality would be substantially unaffected by natural fires in the Jennie Lakes Wilderness.

On December 11, 1987 scoping letters were sent to the twenty-six individuals and public agencies shown in Appendix E, asking for comments about a proposed change in fire management strategy for the Jennie Lakes Wilderness. A copy of the scoping letter can be found in

Appendix D. Eleven replies were received in response to the scoping letter. Individual responses can be found in Appendix F.

The eleven responses indicated overwhelming support for a fire management strategy which would allow natural fires to play, as nearly as possible, their natural ecological role within the wilderness. In addition to the written responses, four agency personnel (Fresno County Air Pollution Control District, California Department of Fish and Game, and two National Park Service) telephoned the author in support of a strategy which would move away from the existing total suppression policy within the Jennie Lakes Wilderness. Three of the agency personnel eventually responded by letter also.

While all respondents supported allowing natural fires to burn under prescribed conditions within the wilderness, most also addressed the use of planned ignitions. Four respondents urged caution with the use of planned ignitions. The California Wilderness Coalition and the Sierra Club both supported unplanned ignitions (natural fires) and planned ignitions to reduce unnatural fuel loading to a point believed to approximate natural conditions, but did not support planned ignitions in support of non-wilderness values such as increased livestock grazing opportunities. The Backcountry Horsemen of California supported planned ignitions, but were concerned about the timing of burns and user conflicts; as was Outward Bound, an outfitter-guide organization which frequently uses the Jennie Lakes Wilderness. The California Department of Fish and Game supported planned ignitions to enhance wilderness values, but was also concerned

about the timing of planned ignitions which might impact available forage during critical deer migration periods. Guest Services, a National Park Service concessionaire and Forest Service permitted resort operation, suggested planned ignitions could best be utilized near the wilderness boundary to help prevent fire intrusion into, or escape from the wilderness area.

One interview was conducted at the District Office. Dutch Scholten, an outfitter-guide permittee, felt large burned over areas might degrade the visual quality of the highly scenic wilderness area. Given the fire history previously discussed, it seems unlikely large catastrophic fires would occur. Management direction in the Sequoia National Forest Land and Resource Management Plan limits the size of prescribed fires within the wilderness to 100 acres.

Both the Tulare County and the Fresno County Air Pollution Control Districts believed there would be no negative impacts to air quality in the San Joaquin Valley. In a telephone conversation with the author, Martin Keast, of the Tulare County APCD, explained that because of the low frequency, small fire size, and the elevation of the wilderness, air quality impacts to other areas would also be negligible.

Sequoia and Kings Canyon National Parks responded enthusiastically to a strategy emphasizing prescribed fire over fire suppression. Two separate letters received by the author stated such a policy would be very similar to their natural fire program. The National Park Service urged that a joint operating plan be developed between the two agencies

to allow prescribed natural fires to spread across administrative boundaries without being subject to suppression efforts. Such an operating plan would save both agencies the cost of fire suppression, and would allow fire to play its natural role in the Jennie Lakes Wilderness and the National Park backcountry boundary areas. Tom Nichols, Environmental Specialist for the two National Parks, also suggested a cooperative effort with interpretive programs and signing. He believes a cooperative effort in these areas would provide better information to the public on wilderness and backcountry conditions, as well as provide an opportunity to explain to the public the similarities and differences between the two agency's management. The California Wilderness Coalition also recommended and endorsed cooperation and coordinated fire management between the Sequoia National Forest and Sequoia and Kings Canyon National Parks.

CHAPTER FIVE

SUMMARY AND RECOMMENDATIONS

This chapter will briefly summarize the procedures, findings, and conclusions of this project paper. A recommended wilderness fire management plan is included, along with proposed follow-up actions necessary to implement the strategy.

Summary

Approval of a fire management strategy for the Jennie Lakes Wilderness can be affected through a fire management area plan or the Forest Land and Resource Management Plan. The Land and Resource Management Plan (LMP) for the Sequoia National Forest was approved on February 25, 1988, and a wilderness implementation plan for the Jennie Lakes Wilderness will be developed as required in the Plan. The objective of this project paper is to develop a fire management strategy which will become a part of the wilderness implementation plan for the Jennie Lakes Wilderness.

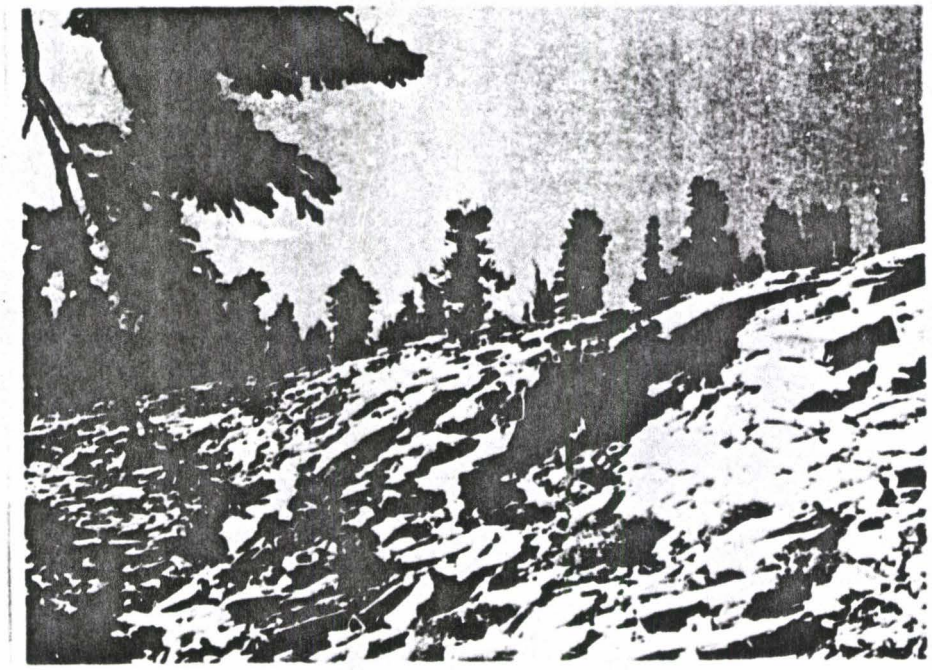
Any strategy for the management of fire within the wilderness must be based on the Wilderness Act of 1964 and the California Wilderness Act of 1984. Both Acts place an emphasis on the maintenance of natural

processes within the legislated wilderness areas. The fire management policy of the Forest Service is to permit lightning fires to play as nearly as possible their natural role within the wilderness setting, and recognizes two types of fires. Prescribed fires can be either naturally caused (lightning) or planned ignitions by managers. All fires not meeting preplanned criteria (including unplanned person caused fires) are wildfires and will be suppressed.

Suppression action may involve confinement, containment, or control strategies, or a combination of these strategies. The Sequoia Land and Resource Management Plan direction is to utilize prescribed fire to enhance wilderness values, and to take appropriate suppression action on wilderness fires which have the potential to exceed 100 acres.

The fire management policy of the Forest Service was originally based on resource values, but shifted to a policy of strict fire suppression in 1935 and would remain so for over 40 years. In 1978 the policy again returned to one based on resource values when the 10 a.m. policy was abandoned. Visitor and user attitudes about wilderness fire management have also been changing. Early research indicated most wilderness users preferred a fire suppression policy. In later years, as more information was made available by the Forest Service and the National Park Service on the natural role of fire in the ecosystem, attitudes changed. Most wilderness users accept natural fires, but the public is not so sure about planned ignitions by wilderness managers. The public expects wilderness managers to exercise caution, using planned prescribed fires based on past fire history, to enhance

wilderness values and achieve natural conditions. This conservative public attitude regarding planned prescribed fires in wilderness areas was found both in the literature reviewed and in comments received by the author through the scoping process.



Granite outcrop - Poop Out Pass

The fire history of the Jennie Lakes Wilderness is one of low intensity surface fires with low frequency of occurrence. This fact is supported in the literature and research, and by the District fire history records. The Jennie Lakes Wilderness apparently has no history of crown fires. Red fir and lodgepole pine are the principal vegetation types, with red fir being a climax species. Slopes are generally flat to moderate, with less than 13 percent of the entire wilderness area over 40 percent slope.

Public comments indicated substantial support for a wilderness fire management strategy which would allow natural fires to burn under prescribed conditions. The Sierra Club, California Wilderness Coalition, and the National Park Service and many others supported such a policy. The National Park Service also proposed setting up a joint operating plan to allow prescribed natural fires to cross the National Forest-National Park boundary saving suppression costs for each agency and permitting fire to assume its natural role without respect to administrative boundaries. They also proposed cooperative efforts in public information and interpretive programs.

Typical wilderness fire management plans and strategies provide guidance for all fire management actions within the wilderness, including responses to wildfires in addition to the use of prescribed fires (planned and unplanned). Wilderness fire management plans also contain prescriptions which are written directions dealing with the threat, occurrence, and use of fire within the wilderness. Prescriptions usually are written for fire management zones within the wilderness. These zones are determined by vegetation types or expected fire behavior, and any social, economic, and political considerations which might constrain fire management within that particular zone. The Jennie Lakes Wilderness was not separated into fire management zones in the development of this strategy because of the relatively small size of the wilderness area, and its homogeneous vegetative types which have a similar expected fire behavior, frequency, and fire history. Most wilderness fire management prescriptions are also constrained by the

level of fire activity occurring on the Forest or within the Region, as well as crew availability to handle possible escapes from the wilderness. Prescriptions must also address the monitoring of individual fires within the wilderness area to insure they continue to burn within the stated prescription and continue to meet the objectives stated in the strategy or plan.

Fire Management Strategy for the Jennie Lakes Wilderness

Based on the historical fire record and the fire regime of infrequent low intensity surface fires of the Jennie Lakes Wilderness, fires which occur within the wilderness are not expected to exceed the parameters of the Sequoia National Forest Land and Resource Management Plan. Fires originating inside the wilderness which threaten the wilderness boundary will require appropriate suppression action. The single exception will be prescribed fires which burn across the administrative boundary between the Sequoia National Forest and Sequoia or Kings Canyon National Parks, subject to the terms and conditions of the joint operating plan between the two agencies. All wildfires and fires which threaten public safety will require appropriate suppression actions. Planned ignitions will require an approved burn plan and be subject to the policy, guidelines, and constraints of FSM 5140. The Sequoia National Forest Fire Staff has recommended an upper complexity limit be established limiting new prescribed fires when monitoring and potential suppression activities may exceed available personnel. For the Jennie Lakes Wilderness, this limit has been set at: (1) more than ten

prescribed fires at one time, or (2) over 300 acres of prescribed fires and wildfires, or (3) more than one 100 acre fire.

Pages 57 through 67 detail a comprehensive plan for managing fire within the Jennie Lakes Wilderness. Appendix material cited in the recommended Interim Wilderness Fire Management Plan follows the fire plan document to retain continuity.

INTERIM WILDERNESS FIRE MANAGEMENT PLAN

JENNIE LAKES WILDERNESS

SEQUOIA NATIONAL FOREST

I. INTRODUCTION

Management objective: Allow fire to play a more natural role in the wilderness ecosystem, except where such activity will be a threat to public safety or adversely affect resources adjacent to the Jennie Lakes Wilderness. This plan will implement the wilderness fire management direction contained in the Sequoia National Forest Land and Resource Management Plan.

II. FIRE MANAGEMENT DIRECTION

Manage all prescribed fires and wildfires within the Jennie Lakes Wilderness according to policy, guidelines, and wilderness management constraints specified in FSM 2320 and FSM 5130.

Implement the Forest-wide management direction contained in the Sequoia National Forest Land and Resource Management Plan:

- Use prescribed fire to enhance wilderness values in all wilderness.
- Use a "confine" or "contain" suppression stragegy for wildfire when public safety will not be compromised, and adjacent resources can be protected.
- Use confinement as a suppression strategy when the potential fire size will generally not exceed 100 acres.

Manage prescribed fires within Air Pollution Control District regulations. Coordinate wilderness fire management activities that potentially impact the air quality of adjacent Class I and other sensitive areas with the responsible agency (i.e., Sequoia and Kings Canyon National Parks, Edwards Air Force Base, China Lake Naval Weapons Center).

Conduct planned ignitions according to policy, guidelines, and constraints contained in FSM 5140.

Manage fires which originate outside the Jennie Lakes Wilderness and burn into the wilderness area as wildfires. (Except prescribed fires entering the wilderness from Sequoia or Kings Canyon National Parks which are burning within U.S.F.S prescription).

Take appropriate suppression action on all wildfires. Make maximum use of confine and contain strategies where appropriate.

Consider any fire that exceeds prescription limits a wildfire and take appropriate suppression action.

Continue fire prevention efforts to reduce human-caused fires within the Jennie Lakes Wilderness using public service media, trailhead notices, and personal contacts.

Take precautions to minimize chances of endangering the personal safety of wilderness users and employees. Inform users of potential risks during the fire season; maintain and dispense current information about ongoing fires within the wilderness.

Appoint a resource advisor to the Incident Commander(s) for all prescribed fires and wildfires within the Jennie Lakes Wilderness. The resource advisor will be appointed by the District Ranger and is responsible for insuring all prescribed fire monitoring and wildfire suppression activities are compatible with wilderness management objectives.

III. FIRE MANAGEMENT PRESCRIPTION

Based on the historical fire record, historical fire weather, and fire regimes of the Jennie Lakes Wilderness, fires occurring within the wilderness are not expected to exceed the wilderness fire management parameters of the Sequoia National Forest Land and Resource Management Plan. Therefore, a prescription based on weather elements is not necessary. Fires near the wilderness boundary, fires which threaten public safety, and all wildfires will require an appropriate suppression action. Prescribed fires will be allowed to burn subject to the constraints of this interim plan. These prescribed fires will also be allowed to burn across the administrative boundary between the Sequoia National Forest and Sequoia or Kings Canyon National Parks within the terms and conditions of the joint operating plan between the two agencies.

In order to assure adequate personnel are available for monitoring and any necessary suppression activities, an upper complexity limit (10 fires at one time, or not more than 300 total acres, or no more than one 100 acre fire) will be established for the Jennie Lakes Wilderness. Human-caused fires will require an appropriate suppression response. Planned ignitions will require an approved burn plan and will comply with the policy, guidelines, and constraints of FSM 5140.

Appropriate Suppression Response

For the Jennie Lakes Wilderness, the preplanned wildfire suppression response strategies are defined as follows:

Control. Control any wildfire which threatens public safety or will exceed the prescribed fire limitations of this interim plan. (see page 60, Prescribed fire limitations).

Contain. Utilize a containment strategy for any wildfire threatening to escape the wilderness, keeping the wildfire within the Jennie Lakes Wilderness boundary.

Confine. Utilize a confinement strategy keeping all other wildfires within the boundary of the Jennie Lakes Wilderness.

The Glossary (Appendix A) of this report contains complete definitions of contain, confine, and control strategies.

Prescription Guidelines

A. The District Ranger or his/her acting must declare any fire within the Jennie Lakes Wilderness either a prescribed fire or a wildfire. Prescribed fires will be allowed to burn as long as they remain in prescription. Wildfires will require an appropriate suppression action, maximizing the use of confine and contain strategies when possible. Decision guidelines have been developed which apply to the entire wilderness. These guidelines require a yes/no decision at each level, with either a decision to take appropriate suppression action, or to continue to the next step of the matrix. For each prescribed fire, these decision guidelines should be reviewed daily or as appropriate by the District Ranger and decisions revised as conditions change. Each decision matrix (the initial matrix and each subsequent review) will become part of the permanent record for each fire after being initialed (with date and time) by the District Ranger. See Appendix I, Exhibit of Decision Matrix.

B. Fires which threaten human life will be suppressed. Suppress all fires which are an immediate threat to the wilderness boundary, unless under the terms of the joint operating plan, the National Park Service will accept the fire as a prescribed natural fire burning into Sequoia or Kings Canyon National Park.

C. The Forest and Regional fire situations have a direct bearing on the fire management strategy for the Jennie Lakes Wilderness. The District Ranger, as the responsible line officer, will have the authority to implement the plan subject to the following management constraints:

Management Constraints

1. All wildfires within the Jennie Lakes Wilderness will be subject to the guidelines of the Sequoia National Forest Fire Management Contingency Plan. Prescribed fires within the Jennie Lakes Wilderness are exempt from Contingency Plan constraints.

2. At all Contingency Levels, it is recommended the Zone Coordinator be informed of the number of prescribed fires and the number of wildfires (and their respective suppression strategies) within the Jennie Lakes Wilderness.

3. Prescribed fire limitations: No new fire starts will be declared prescribed fires if any of the following conditions exist within the Jennie Lakes Wilderness:

   A. More than 10 prescribed fires at any one time.

   B. More than 300 total acres burning under prescribed or wildfire conditions at any one time.

   C. Any individual prescribed fire or wildfire is over 100 acres.

Detailed descriptions of the Sequoia National Forest Contingency Levels, their restrictions, and how they are determined can be found in Appendix II.

IV. REPORTING AND IMPLEMENTATION

The District Fire Management Officer will coordinate with the Sequoia Dispatcher until an initial evaluation is completed to determine the management status of each new fire, or the District Lightning Plan is activated. The Initial Action Incident Commander or air reconnaissance observer will prepare an initial action fire report. The report information will be forwarded to the District Fire Management Officer so a prescribed fire or wildfire determination can be made using the decision matrix (see Appendix III, Initial Action Fire Report). The District Fire Management Officer will obtain approval from the District Ranger (or the designated acting) to implement a prescribed fire strategy. The Sequoia Dispatcher will be informed of the strategy decision and monitoring procedures.

V. MONITORING

Monitoring is the systematic process of collecting and recording fire behavior and environmental data for the purpose of managing a fire. Data collections will include flame length, intensity, rate-of-spread estimates, topographic information, fuels, smoke dispersion data, and weather observations (see Appendix IV, Fire Monitoring Report).

1. All prescribed fires will be monitored. Monitoring frequency will vary with each fire occurrence. The complexity of the monitoring situation is dependent on the following factors:
   A. Fire location
      Fires that may require more frequent monitoring are:
      1. Fires near or burning towards wilderness boundaries.
      2. Fires burning in or toward high recreation use areas.
   B. Fire size potential
   C. Observed fire behavior
   D. Other fire activity (District, Forest, Region)

2. Monitors will be qualified to evaluate fire behavior and resource management considerations.

3. Monitoring can be accomplished by aerial reconnaissance, from lookouts, or by ground personnel; or a combination of all three.

A minimum amount of equipment will be required to ensure safety and adequate data collection. Equipment needs include the following:

1. Fire Shelter
2. Belt Weather Kit
3. Necessary Forms
4. Fusees
5. Personal Protective Gear
6. Compass/Signal Mirror
7. Radio
8. Handtools
9. First Aid Kit
10. Flashlight
11. Map

VI. PUBLIC SAFETY AND INFORMATION

Safety

Trailhead signs will be posted telling wilderness visitors they are entering a wilderness area where prescribed fire management activities are occurring for the purposes of preserving or enhancing the wilderness resource. The message will describe how to act or react if a prescribed fire situation is encountered, and encourage visitors to choose areas away from the fire area(s) for their recreation activities.

In the event of an emergency where evacuation appears necessary, a helicopter may be dispatched. If the situation is not one of imminent danger, but a warning to visitors is needed, the nearest Forest Service personnel will be sent to the area to make contacts with visitors.

Forest Service employees working within the wilderness will be advised of the prescribed fire and wildfire status as appropriate.

Once a fire has been declared a prescribed fire, information listing fire location, fire behavior, expected dangers, and precautions to be taken will be posted at appropriate trailheads. If necessary, a Forest Service employee will be assigned to the vicinity of the fire as an additional safety precaution and to provide information for visitors.

All employees assigned to the immediate vicinity of a prescribed fire will carry a fire shelter and take the same wildfire precautions described in FSH 5709.11--Health and Safety Code Handbook, Chapters 3-2, 3-3, and 3-8.

Information/User Education

An ongoing Inform and Involve Program will be developed by the Sequoia National Forest and the Hume Lake Ranger District to

gain support and understanding of the fire management strategies in the Jennie Lakes Wilderness. As a minimum, the program should address the following:

A. Cooperative interpretive efforts with the National Park Service.

B. Appropriate signing at trailhead bulletin boards which will explain wilderness fire management and the natural role of fire.

C. Contacts with individual wilderness outfitter-guides to explain wilderness fire management strategies.

D. The incorporation of wilderness fire management into public and in-service presentation programs.

E. Preparation of a slide, movie, or video program explaining wilderness fire management strategies for VIS programs and presentations to wilderness users, civic groups, schools, and agency personnel.

F. Assistance to the news media in preparing news articles explaining wilderness fire management and reporting ongoing prescribed fires.

G. Notification of the appropriate Information Specialists, Air Traffic Controllers, Dispatchers, and Agencies.

VI. COOPERATION WITH THE NATIONAL PARK SERVICE

Evaluate each fire or fire situation with potential to cross administrative boundaries between the Sequoia National Forest and Sequoia or Kings Canyon National Parks. Manage prescribed fires within the Jennie Lakes Wilderness according to the terms and conditions of the joint operating plan between the agencies. Evaluate annually by December 1, the operational procedures of this plan with Sequoia and Kings Canyon National Parks.

The mutual objective will be to allow prescribed natural fires, originating on either side of administrative boundaries, to burn across such boundaries when burning within the prescription guidelines contained in this plan and when this is mutually agreed upon in advance. Each fire crossing administrative boundaries will be considered a new start by the receiving unit, and must conform to prescription guidelines in order to be declared a prescribed fire. That portion of the fire will then becomes the responsibility of the receiving unit.

If a prescribed fire crossing over to another unit is declared not acceptable for any reason by the recieving unit, the unit who last accepted the fire as a prescribed fire will be responsible for protecting the common boundary.

Forest Service and National Park Service personnel will develop a procedure and schedule to keep each agency informed of the status of prescribed fires adjacent to administrative boundaries. Monitoring activities will be coordinated between the agencies whenever possible.

VIII. FINANCIAL MANAGEMENT

Fiscal policies and guidelines contained in FSH 6509.11k, Service-wide Finance and Accounting Handbook, will govern wilderness fire management activities within the Jennie Lakes Wilderness. Once a fire has been declared a prescribed fire, Recreation Management funds will be used for all monitoring, and any actions necessary to maintain the fire within prescription. The Hume Lake Ranger District will set up a separate management code of Recreation Management funds for monitoring and other activities related to prescribed fire management within the Jennie Lakes Wilderness. FFF funds will not be used except for fires declared wildfires.

IX. EVALUATION

In implementing this Interim Wilderness Fire Management Plan, the following items will be evaluated:

A. On Each Prescribed Fire:

1. Evaluate how well the mechanisms (guidelines and standards) of the prescription are working.

2. Evaluate how well fire behavior parameters have been estimated.

B. Annually:

1. Evaluate whether changes in fuel conditions not associated with "natural" succession rates are occurring (ie insect caused timber mortality adding to fuel loading).

2. Evaluate the wilderness fire management information/user education program and its effectiveness.

3. Evaluate whether the wilderness fire management plan should be revised to accommodate changing conditions and/or those necessitated by experience.

This evaluation will be conducted jointly by the District Fire Management Officer and the District Resource Officer and reviewed by the District Ranger.

APPENDIX I

EXHIBIT OF DECISION MATRIX

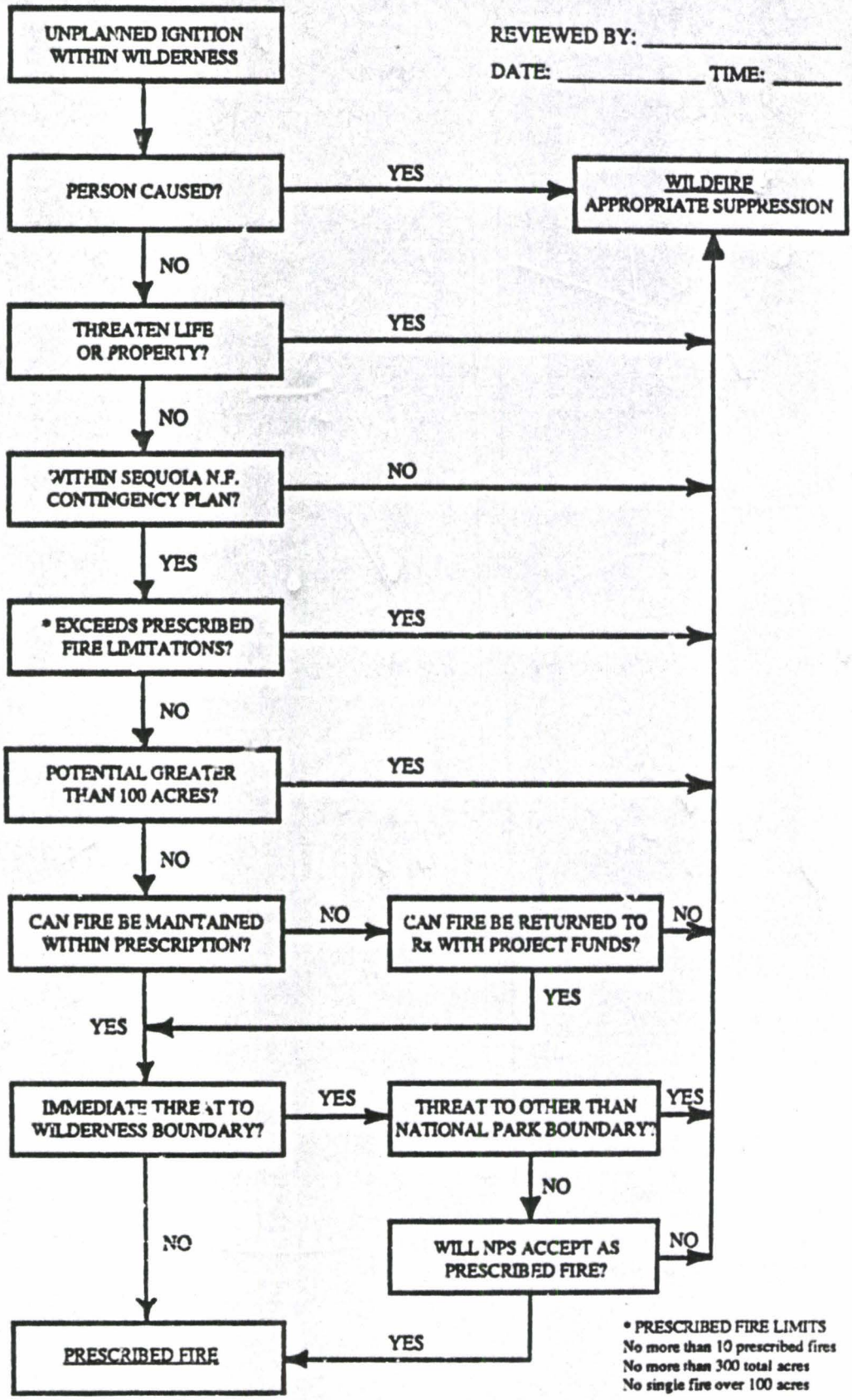
DECISION MATRIX
INTERIM FIRE MANAGEMENT PLAN
JENNIE LAKES WILDERNESS

FIRE NAME: _____

FIRE NO.: _____ _____
District Forest

REVIEWED BY: _____

DATE: _____ TIME: _____



* PRESCRIBED FIRE LIMITS
No more than 10 prescribed fires
No more than 300 total acres
No single fire over 100 acres

APPENDIX II

CONTINGENCY LEVELS

SEQUOIA NATIONAL FOREST

Fire Management Contingency Plan

Recommended By: Lee R. Belau — Fire Management Officer — Date 4/7/87 4/6/88

Approved By: J. Carter — Forest Supervisor — Date 5/10/87

CONTINGENCY PLAN

I. PURPOSE - The purpose of this plan is to assure that the commitment of resources to prescribed burning projects on the forest is commensurate with existing and anticipated wildfire suppression needs.

II. INTRODUCTION - The Forest F.M.O. will determine and set contingency "levels" based upon Forest-wide fire supression resource availability, actual and predicted fire activity, weather forecasts, and other related factors. The "active" contingency level will determine the actions permitted on prescribed fire projects. Fires burning within prescriptions contained in approved Wilderness Fire Management Plans are exempt from these constraints.

The contingency levels are:

LEVEL 1 - NORMAL OPERATIONS - Prescribed fire projects meeting approved burn plan constraints are permitted.

LEVEL 2 - NO NEW IGNITIONS started. Assure containment of existing projects.

LEVEL 3 - NO NEW IGNITIONS. CONTROL and/or extinguish all prescribed fire projects.

Contingency level constraints are in addition to burn plan and air quality requirements.

In all but emergency situations, contingency levels will not be increased without at least 48 hour warning and consultation with District Rangers.

III. CONTINGENCY LEVEL DETERMINATION - The following table shall be used as a guide for level determination. Actual conditions or situations may require upward or downward adjustments.

Contingency levels may be increased by the South Zone coordinator when zone, Region, or National Conditions warrant.

Rev. 5/88

CONTENGENCY LEVEL GUIDE

Fire Resources Committed (Wildfire and/or Prescribed Fire)

FOREST AVERAGE PREDICTED BURNING INDEX	(1) VALUE OF (2) COMMITTED FIRE RESOURCES			
	0-20	20-40	40-60	61+
0-30	LEVEL 1	LEVEL 1	LEVEL 1	LEVEL 1
31-40	LEVEL 1	LEVEL 1	LEVEL 2	LEVEL 2
41-60	LEVEL 1*	LEVEL 1*	LEVEL 2	LEVEL 3
61+	LEVEL 2	LEVEL 2	LEVEL 3	LEVEL 3

*No more than 2 projects may be started on the Forest

(1) FIRE RESOURCE VALUES

MODULE	Value(Weight		Total Avail	Total Value
Key Individuals	1	(DFMO, ADFMO, Fuels Techs)	15	15
Prevention	2		15	30
Air Tanker	3		1	3
Engines	4		10	40
Hot Shots	5		2	10
Helicopter	6		2	12
				110

(2) "COMMITTED" means assigned to any fire project, suppression or monitoring activity.

IV. RESPONSIBILITIES - Districts shall report required resource availability and prescribed fire information by 0900 daily to the Forest Dispatcher.

The Forest Dispatcher shall collect and summarize District information for transmission to South Zone by 1000 daily.

The Forest Assistant F.M.O. will review District data along with weather and fire danger predictions each day and recommend necessary changes in contingency levels to the Forest F.M.O.

Revised 4/87

FIRE MANAGEMENT SITUATION SUMMARY

Sequoia National Forest

Completed By: _____ Date: _____

Time: _____

I. Fire Situation

1. Number of wildfires in progress on the Forest? _____

   Existing and potential complexity. _____

2. Number of prescribed burn projects in progress on the Forest? _____

3. Number of project fires in progress on neighboring forests? _____

   Complexity _____

4. Number of project fires in progress in the Region (not included in #3) _____

   Complexity _____

II. Manpower Situation

Sequoia forces committed to wildfire suppression or project burns:

1. Engines _____
2. Overhead _____
3. Crews _____
4. Patrols _____
5. Helicopters _____

III. Weather Situation

1. Red flag watch issued _____
2. Red flag warning issued _____
3. LAL prediction _____
4. Frontal system predicted _____

   Intensity _____

5. Active lightning storm in progress

   a. on the forest _____

   b. on neighboring forests _____

6. Burning conditions

   a. Actual (today) _____

   b. Predicted (tomorrow) _____

   c. Predicted severity (30-day outlook) _____

IV. Air Quality Restraints in Effect _____

V. Comments:

SEQUOIA NATIONAL FOREST

CONTINGENCY LEVEL EVALUATION

Level I - All criteria must be met.

	Yes	No
Forces available on Forest to handle fires	___	___
No frontal systems predicted No red flag watch or warning issued	___	___
Forces will be available for time of burn out	___	___
No air quality restraints	___	___
Total	___	___

Level II - Meets one or more criteria

Forces available to contain only existing projects	___	___
Weak frontal system predicted Red Flag watch issued Predicted BI 60 or more	___	___
Air quality restraints in effect	___	___
Uncontained project fire on neighboring forest	___	___
Level II declared by Regional Office/North Zone	___	___
Total	___	___

Level III - Meets one or more criteria

Severe weather prediction Red Flag warning issued Intense frontal system predicted LAL's of 3,4, or 5	___	___
Uncontrolled project fire on forest	___	___
Heavy manpower demands from Region	___	___
Level III declared by Regional Office/North Zone	___	___
Total	___	___

APPENDIX III

INITIAL ACTION FIRE REPORT

INITIAL ACTION FIRE REPORT

JENNIE LAKES WILDERNESS

Fire Name _____ Fire No. _____ _____
District Forest

Location T.____ R.____ Sec.____ 1/4 ____ 1/4 ____ Cause _____

Observer _____ Date _____ Time _____

A. Character of Fire

1. Smoldering
2. Creeping
3. Running
4. Crowning
5. Spotting
6. Fire whirls
7. Backing
8. Rate of Spread _____ ch/hr.

B. Flame Length

1. 0 - 1 ft.
2. 1 - 2 ft.
3. 2 - 3 ft.
4. 3 - 8 ft.
5. 8 - 12 ft.
6. 12+ ft.

C. Size Estimate

1. Spot
2. 1/4 - 1/2 acre
3. 1/2 - 3/4 acre
4. 1 acre
5. 1 - 5 acres
6. 5+ acres

D. Potential Estimate

1. Spot
2. 1/4 - 1/2 acre
3. 1/2 - 3/4 acre
4. 1 acre
5. 1 - 5 acres
6. 5+ acres

E. Weather Conditions

1. Temp _____
2. Humidity _____
3. Wind Dir._____
4. Wind Speed _____
5. Smoke Dispersal:
   Good Poor

F. Fuel

1. Grass
2. Brush
3. Repro/Poles
4. Mature Timber
5. Snag(s)
6. Logs/Duff
7. Other _____

G. Percent Slope & Position

1. Flat	1. Ridgetop
2. 0 - 20%	2. Upper 1/3
3. 21 - 40%	3. Mid 1/3
4. 41+%	4. Lower 1/3
	5. Bottom

H. Imminent Threat to

1. FJ Wilderness Boundary
2. NPS Boundary
3. Lives/Property

I. Estimate of Number of Persons to Control _____

J. Remarks (i.e. water availability, natural barriers, route to fire)

_____

_____

APPENDIX IV

FIRE MONITORING REPORT

PRESCRIBED FIRE MONITORING REPORT

JENNIE LAKES WILDERNESS

1. Fire Name _____ 2. Fire No. _____ _____
   District Forest
3. Location T._____ R._____ Sec._____ 1/4 _____ 1/4 _____
4. Observer _____ Date _____ Time _____
5. Exposure _____ 6 Position on Slope _____
7. Percent Slope _____ 8. Smoke Dispersal good poor
9. Elevation _____ 10. Wind Direction _____
11. Wind Speed _____ 12. Size at Obs. _____
13 Potential Size _____ 14. Humidity _____
15. Temperature _____ 16. Flame Length _____
17. Contingency Level _____ 18. No. personnel to control _____
19. Imminent Threat to: FS Wilderness Boundary NPS Boundary
    Other _____
20. Fire Behavior Potential (size, fuels, terrain, fire weather)

_____

_____

_____

_____

21. Fire Management Recommendations _____

_____

_____

_____

22. Remarks _____

_____

_____

_____

_____

Recommended Implementation Actions

Before this wilderness fire management strategy can be approved by the Forest Supervisor, four matters require additional collaboration and attention. The target date for implementation of this wilderness fire management strategy is August 15, 1988.

The principal prerequisite will be to establish a joint operating plan between the Forest Supervisor, Sequoia National Forest, and the Superintendent, Sequoia and Kings Canyon National Parks. This operating plan will set the criteria when natural prescribed fires will be allowed to cross administrative boundaries without being subject to suppression activities by the two agencies. Both agencies are in favor of this approach, and it appears a joint operating plan can be signed before July 15, 1988.

A second prerequisite will be to revise the Sequoia National Forest Fire Management Contingency Plan to reflect wilderness fire management objectives within the contingency level restrictions for prescribed fire within the Jennie Lakes Wilderness. This does not appear to be a major modification, and can be approved by the Forest Supervisor.

A third prerequisite is to install wilderness trailhead signing explaining wilderness fire management and the natural role of fire within the Jennie Lakes Wilderness (and perhaps Sequoia and Kings Canyon National Parks). An opportunity exists here for a cooperative effort with the two National Parks at some specific trailhead and trail

locations. This can be accomplished by the District before August 15, 1988.

The fourth prerequisite will be to implement an Inform and Involve Program, contacting the local media and wilderness users and cooperators about the implementation of a new fire suppression policy within the Jennie Lakes Wilderness. (See Part IV, Public Safety and Information, in the recommended Interim Wilderness Fire Management Plan). This will be ongoing, with many of the contacts occurring before, and at the time the Interim Wilderness Fire Management Plan is approved.

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APPENDIX A

GLOSSARY

APPENDIX A--GLOSSARY

Appropriate Suppression Response: The planned strategy for suppression action (in terms of kind, amount, and timing) on a wildfire which most effeciently meets fire management direction under current and expected burning conditions. The response may range from a strategy of prompt control to one of containment or confinement.

Confine: To limit fire spread within a predetermined area principally by use of natural or preconstructed barriers or environmental conditions. Suppression action may be minimal and limited to surveillance under appropriate conditions.

Contain: To surround a fire, and any spot fires therefrom, with control lines as needed, which can reasonably be expected to check the fires's spread under prevailing and predicted conditions.

Control: To complete the control line around a fire, any spot fires therefrom, and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control line; and cool down all hot spots that are immediate threats to the control line, until the line can reasonably be expected to hold under foreseeable conditions.

Escaped Fire: A fire which has exceeded, or is anticipated to exceed, preplanned initial action capabilities or the fire management direction.

Fire Management Direction: Fire management standards, guidelines, and practices based upon land and resource management objectives. Fire management direction is used to define the kind, level, and timing of fire protection and use activities, including appropriate suppression strategies, which efficiently meet management objectives for each management area for the range of expected fire behavior conditions.

Initial Action: The prompt, preplanned response to a wildfire.

Net Value Change (NVC): The sum of the changes in resource values on a land area that results from increases (benefits) and decreases (damages) in resource outputs as a consequence of fire.

Planned Ignition: A fire started by a deliberate management action.

Prescribed Fire: A wildland fire burning under preplanned, specified conditions to accomplish specific planned objectives. It may result from either a planned or unplanned ignition.

Prescription: A predesignated set of criteria established for the use of prescribed fire to accomplish specific land and resource management objectives.

Unplanned Ignition: A fire started at random by either natural or human-causes, or a deliberate incendiary fire.

Wildfire: Any wildland fire not designated and managed as a prescribed fire within an approved prescription.

APPENDIX B

CALVEG CLASSIFICATION SYSTEM

APPENDIX B--CALVEG CLASSIFICATION SYSTEM

The CALVEG classification system was developed to provide the various resource disciplines within the Forest Service in California a common interdisciplinary data base system for resource planning.

The CALVEG classification system fulfills the following administrative objectives:

1. It is compatable for use by all disciplines of the Forest Service within Region 5.

2. It is compatable with the proposed National Site Classification System for Renewable Resource Inventories and Assessments.

3. It can take full advantage of current data bases within individual disciplines and allow a method to exchange that data both within and between disciplines.

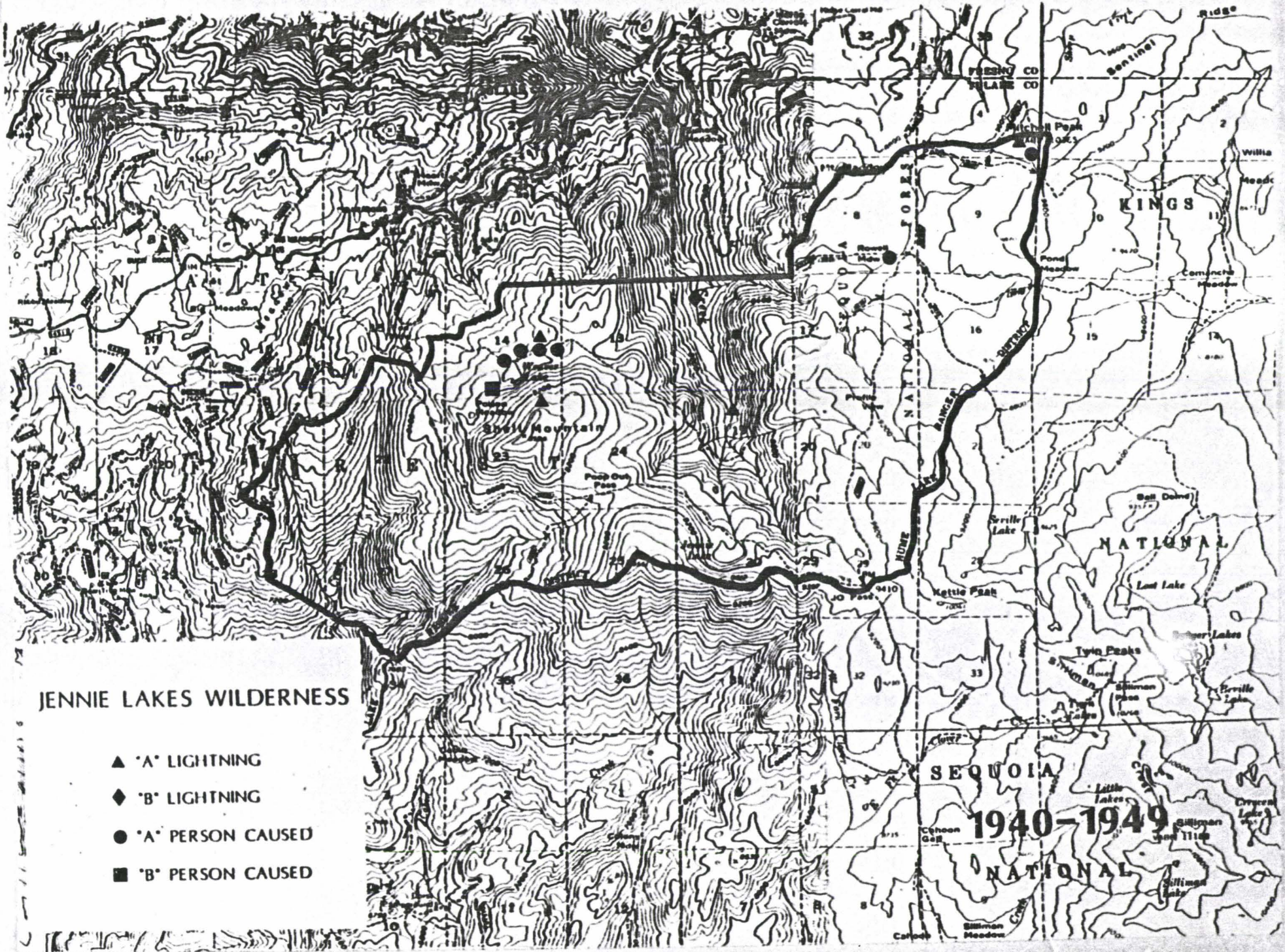
4. It compliments existing vegetation classification systems.

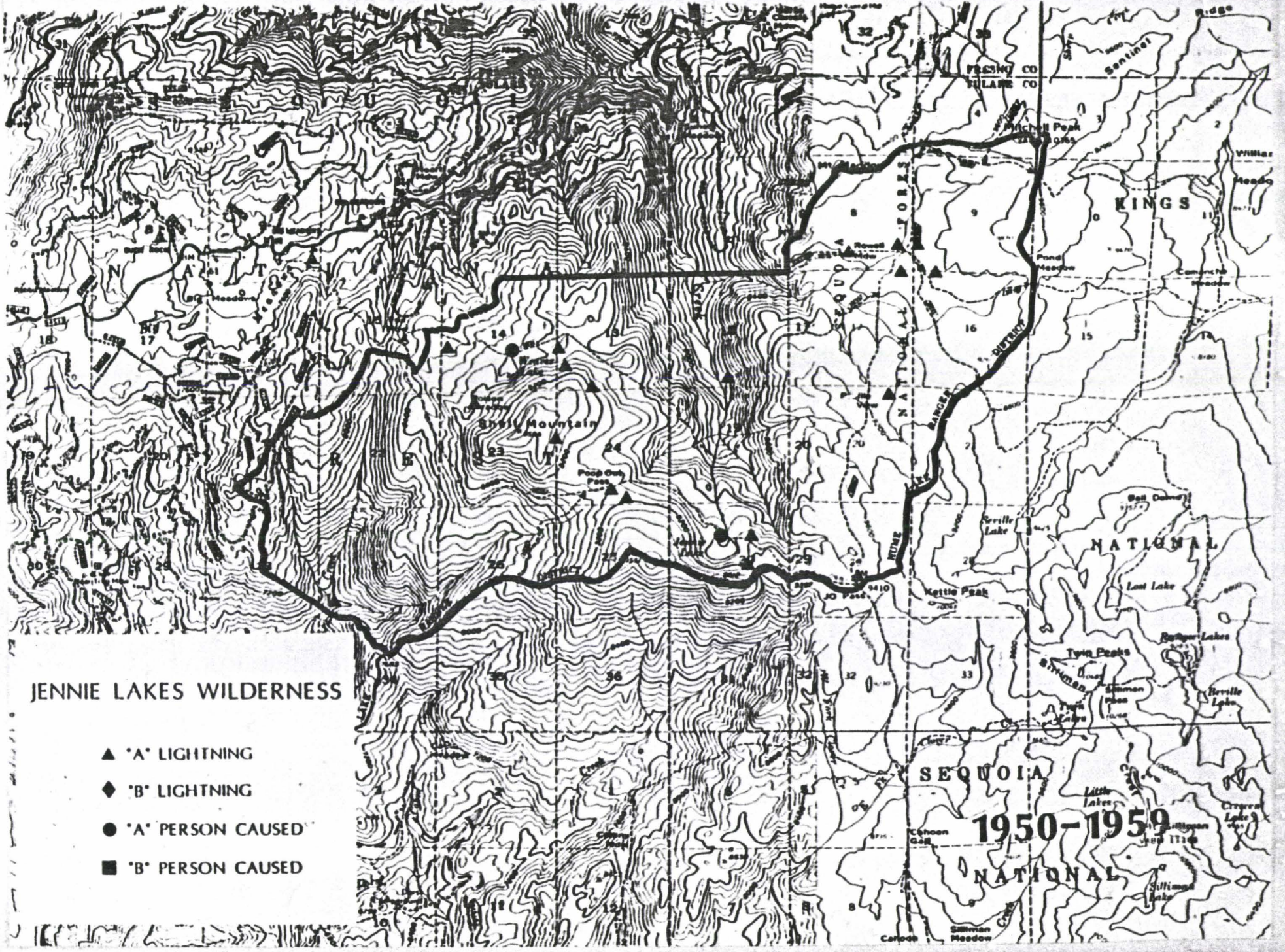
The CALVEG system can be used to identify either existing or potential vegetation. From this basic data, interpretations can be made which are applicable and useful to any discipline. Thus, rather than identify a vegetative type as "non-commercial", "poor range condition", or "key wildlife habitat", the existing vegetation may be identified at the Series or Association level; such as Ponderosa Pine Series- less than 25% stocking, or Star Thistle-Forb Association, or Old Growth Douglas-fir Series.

The CALVEG system was designed to encompass the needs of remote sensing via LANDSAT imagery, high elevation and low elevation infrared photography, and natural color photography.

APPENDIX C

FIRE LOCATION MAPS


JENNIE LAKES WILDERNESS
▲ "A" LIGHTNING
◆ "B" LIGHTNING
● "A" PERSON CAUSED
■ "B" PERSON CAUSED
SEQUOIA
1940–1949
NATIONAL
KINGS
NATIONAL
Shell Mountain
Kettle Peak
Tyin Peaks
Mitchell Peak
Pond Meadow
Comanche Meadow
Bell Dome
Lost Lake
Little Lakes
Gillman Meadow
Cahoon Gap
Cahoon Meadow
HUME LAKE
FRESNO CO
TULARE CO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◆ "B" LIGHTNING
● "A" PERSON CAUSED
■ "B" PERSON CAUSED
1950-1959
KINGS
SEQUOIA
NATIONAL
Shell Mountain
Kettle Peak
Twin Peaks
Mitchell Peak
Sentinel
Tyndall
Williamson
Trail Crest
Crescent Meadow
Pond Meadow
Deer Meadow
Bearpaw Meadow
Log Meadow
Lost Lake
Berryhill Lakes
Berville Lake
Little Lakes
Cohoon Gap
Siliman Meadow
Siliman Lake
Crevice Lake
Granite Peak
Pinto Lake
Kern Canyon
Tunnel Meadow
Tehipite Dome
Tehipite Valley
Monarch Divide
Redwood Mountain
Redwood Meadow
Big Meadow
Hockett Meadow
Hockett Trail
Hockett Peak
Hockett Plateau
Summit Meadow
Summit Trail
Summit Lake
Summit Ranger Station
Quail Meadow
Quail Flat
Quail Trail
Quail Peak
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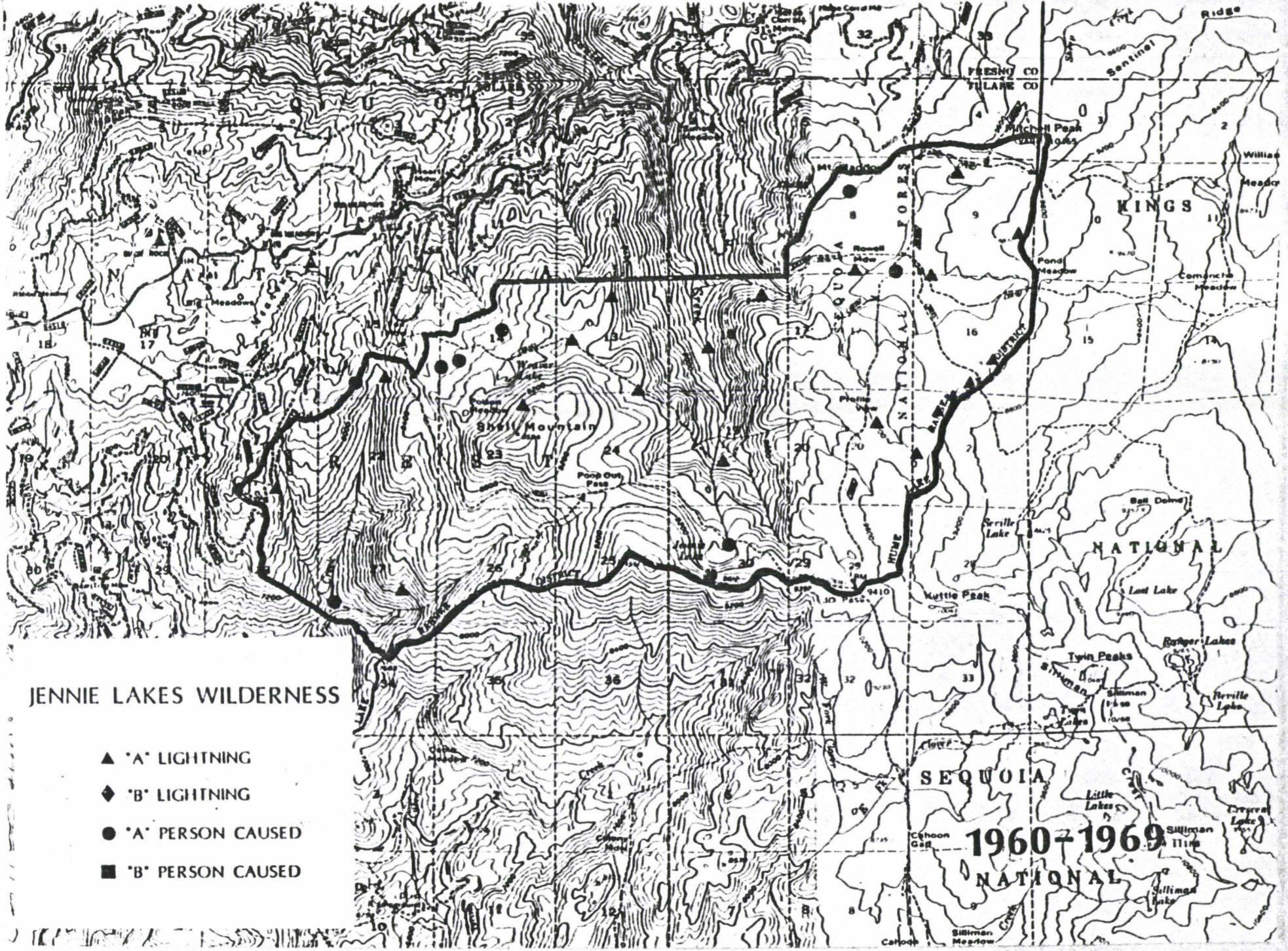
Quail Ranger Station
Quail Ranger
Quail Ranger District
Quail Ranger Station
Quail Ranger
Quail Ranger District
Quail Ranger Station
Quail Ranger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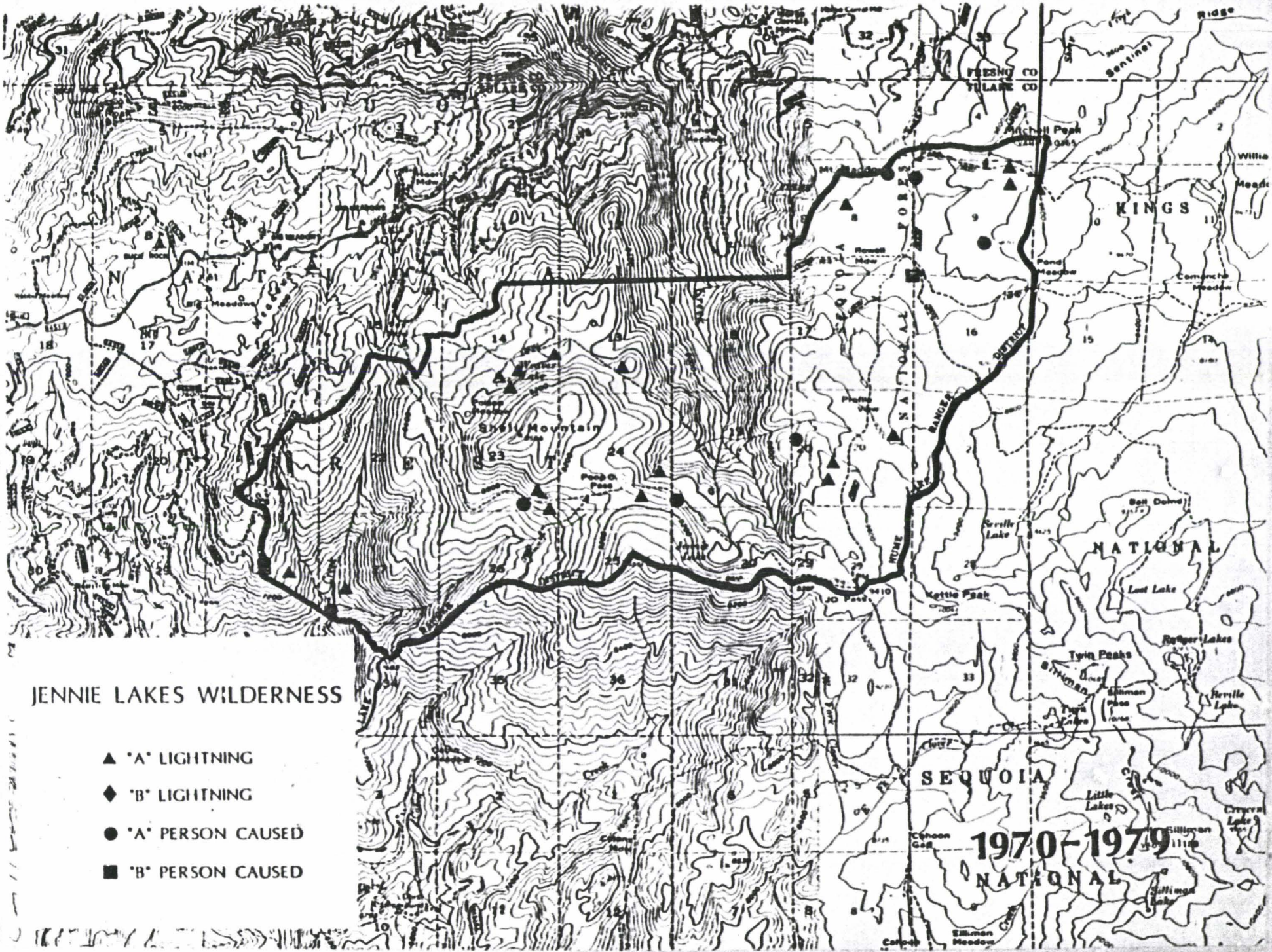
◆ "B" LIGHTNING
● "A" PERSON CAUSED
■ "B" PERSON CAUSED
1960-1969
FRESNO CO
TULARE CO
KINGS
SEQUOIA
NATIONAL
FOREST
DISTRICT
Shell Mountain
Kettle Peak
Twin Peaks
Mitchell Peak
Pond Meadow
Comanche Meadow
Ball Dome
Lost Lake
Ranger Lakes
Little Lakes
Sillimen Lake
Sillimen Meadow
Cahoon Gap
Pond Out Pass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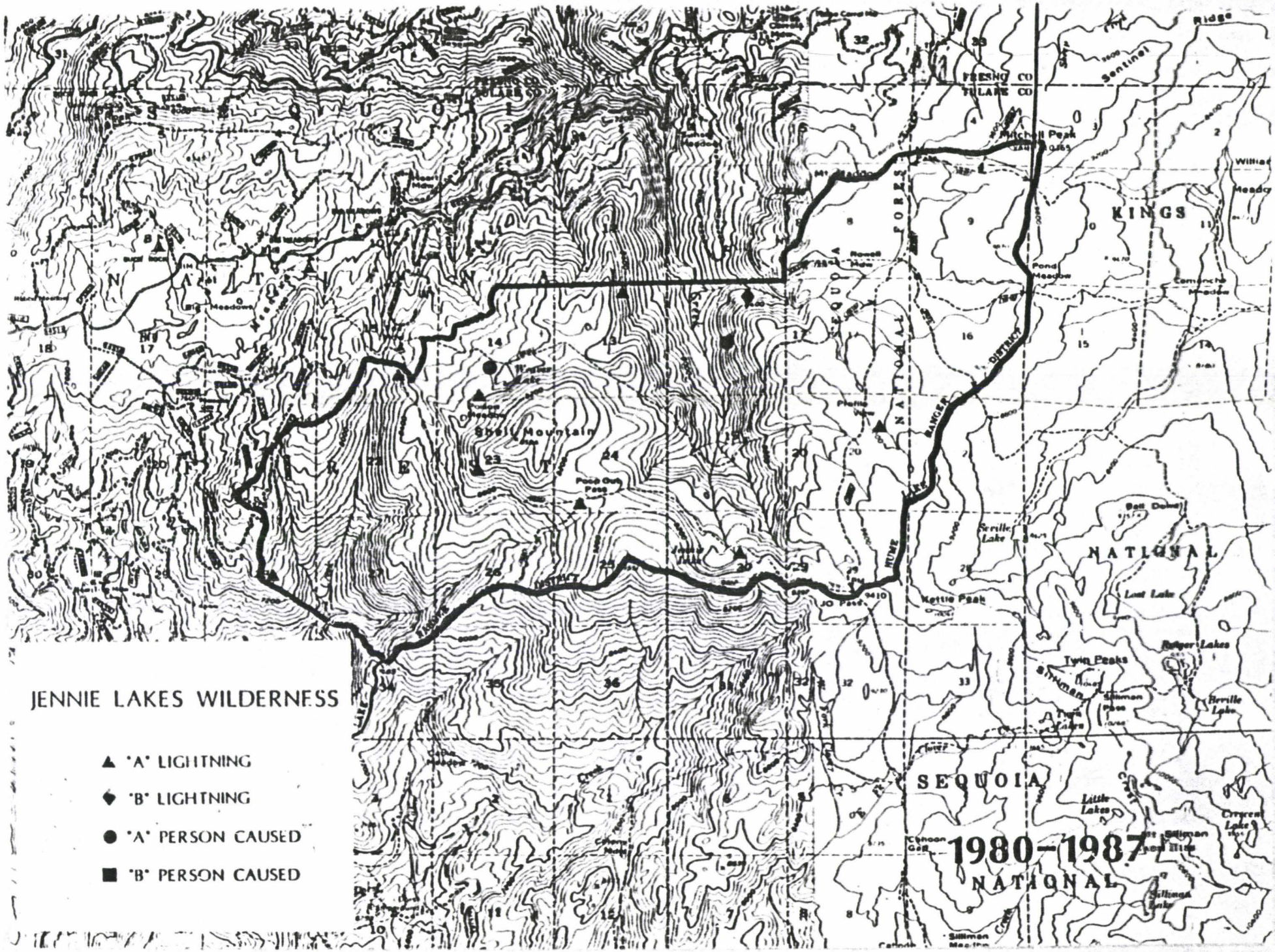
1970-1979
KINGS
NATIONAL
SEQUOIA
NATIONAL
Shelly Mountain
Kettle Peak
Twin Peaks
Little Lakes
Ben Dome
Mitchell Peak
Pond Meadow
Comanche Meadow
Lost Lake
Rattler Lakes
Florille Lake
Crown Lake
Silliman Lake
Cahoon Gap
Silliman Meadow
Colby Meadow
Pinto Lake
Pinto Peak
Pinto Creek
Pinto Basin
Pinto Trail
Pinto Flat
Pinto Mtn.
Pinto Pass
Pinto Lakes


JENNIE LAKES WILDERNESS
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◆ "B" LIGHTNING
● "A" PERSON CAUSED
■ "B" PERSON CAUSED
1980–1987
KINGS
SEQUOIA
NATIONAL
Steel Mountain
Kettle Peak
Twin Peaks
Mitchell Peak
Sentinel Ridge
Pond Meadow
Serville Lake
Last Lake
Ridger Lakes
Little Lakes
Crescent Lake
Cannon Gap
Silliman Pass
Silliman Peak
Silliman Lake
Silliman Mtn
Mt Maggie
Pass Creek Pass
JO Pass
FRESNO CO
TULARE CO
HUME LAKE RANGER DISTRICT
SEQUOIA NATIONAL FOREST

APPENDIX D

PUBLIC INVOLVEMENT--SCOPING LETTER

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HUME LAKE RANGER DISTRICT
35860 E. KINGS CANYON RD.
DUNLAP, CA. 93621

REPLY TO: 2320

DATE: December 11, 1987

Dear

I am presently preparing a fire management strategy for the Jennie Lakes Wilderness. This strategy may also evolve into an interim fire management plan pending the development and approval of a Wilderness Management Plan for the Jennie Lakes Wilderness. I would appreciate your involvement in the development of this fire management strategy, but first, let me provide a little background.

The Final Forest Land and Resource Management Plan (LMP) for the Sequoia National Forest is scheduled to be approved in the Spring of 1988. Management Direction contained in the Draft Land and Resource Management Plan issued in November 1985 would permit the use of prescribed fires to enhance wilderness values, and also states managers may use planned and unplanned ignitions in the management of wilderness.

This direction meets the Forest Service objectives of fire management in wilderness to:

1. Permit lightning caused fires to play, as nearly as possible, their natural ecological role within wilderness.

2. Reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness.

Under specific conditions, qualified Forest Service Officers could ignite a prescribed fire in wilderness to reduce unnatural buildups of fuels to meet the objectives stated above.

The preferred alternative of the Draft Land and Resource Management Plan allows prescribed fires to burn as long as their potential size would not generally exceed 100 acres, would not escape the wilderness, and would not present a safety hazard. These fires could be ignited by managers (planned ignition) to enhance wilderness values, or be ignited naturally by lightning (unplanned ignition).

Given this brief background, I hope you will take a few minutes to let me know your thoughts and concerns about fire management within the Jennie Lakes Wilderness. I have enclosed a map for your reference along with a stamped return envelope. If you only have a few comments you may wish to just put them at the bottom of this letter and return it to me. If you have no comments, I would like to know that too. If you wish, you may contact me by phone at (209) 338-2251. In order to complete this project in a timely manner, it would be very helpful to receive your comments by January 1, 1988.

Sincerely,

MICHAEL L. EVANS
Resource Officer

Enclosures

APPENDIX E

PUBLIC INVOLVEMENT--SCOPING LETTER ADDRESSEES

SCOPING LETTER ADDRESSEES

			Fresno County Sportsmans Club	Fresno, CA 93710
			High Sierra Stock Users Assn.	Porterville, CA 93258
Mr.	Rod	Alexander	Kaweah Flyfishers	Visalia, CA 93278
Dr.	Virginia	Barnes	Montecito-Sequoia Camp Inc.	Los Altos, CA 94022
Ms.	Carla	Cloer	Sierra Club-Kern/Kaweah	Porterville, CA 93257
Mr.	John	Davis	Sequoia and Kings Cyn Natl.Park	Three Rivers, CA 93271
Mr.	Steven	Evans	CA Wilderness Coalition	Davis, CA 95616
Mr.	George	Glover	Tulare County Audubon Society	Visalia, CA 93278
Mr.	Lewis	Goins		Visalia, CA 93277
Mr.	Martin	Keast	Tulare County APCD	Visalia, CA 93291
Ms.	Charlene	Little	Sierra Club-Kern/Kaweah	Kernville, CA 93238
Mr.	Jose	Martinez	Fresno County APCD	Fresno, CA 93721
Mr.	Alvin	Miller	Exeter Sportsmen's Assoc.	Exeter, CA 93221
Mr.	Perry	Morris	Outward Bound	Portland, OR 97201
Mr.	Tom	Nichols	Seq. and Kings Canyon Natl.Park	Three Rivers, CA 93271
Mr.	George	Nokes	Dept. of Fish and Game	Fresno, CA 93710
Mr.	Glen	Olson	National Audubon Society	Sacramento, CA 95825
Mr.	Merle	Person	H.S.S.U.A.	Fresno, CA 93727
Ms.	Gail	Presley	Dept. of Fish and Game	Visalia, CA 93278
Mr.	John	Rassmussen	Tehipite Chapter, Sierra Club	Squaw Valley, CA 93675
Mr.	Gene	Rose	Fresno Bee	Fresno, CA 93706
Mr.	Dutch	Scholten	Wilsonia Ski Touring	Grant Gove, CA 93633
Mr.	Robert	Seney	Guest Services Inc.	Three Rivers, CA 93271
Mr.	Stanley	Stephens	Dept. of Fish and Game	Visalia, CA 93277
Mr.	John	Vincent	Horse Corral Pack Station	Woodlake, CA 93286
Mr.	Bob	White	Seq. and Kings Canyon Natl.Park	Grant Grove, CA 93633

APPENDIX F

PUBLIC INVOLVEMENT--SCOPING LETTER RESPONSES

United States Department of the Interior
NATIONAL PARK SERVICE
SEQUOIA AND KINGS CANYON NATIONAL PARKS
THREE RIVERS, CALIFORNIA 93271

IN REPLY REFER TO:
L7619

February 11, 1988

Mr. Michael L. Evans
District Resource Officer
Hume Lake Ranger District
Sequoia National Forest
35860 East Kings Canyon Road
Dunlap, California 96321

Dear Mr. Evans:

Enclosed is your manuscript for the Jennie Lake wilderness area. My staff has marked several pages with comments, as requested by you. In general, we are very pleased with your work, and would like to see it implemented as soon as possible.

If you are successful in getting the plan approved, we would like to set a date for discussion of the operational procedures. We are particularly concerned with developing standards for monitoring frequency, qualifications of monitors, method of documentation, and procedures for handing off responsibility of a fire from one agency to another. We are confident that such issues can be resolved without too much difficulty.

Congratulations on getting the ball rolling towards an interagency wilderness fire program.

Sincerely,

John H. Davis
Superintendent

Enclosure

United States Department of the Interior

NATIONAL PARK SERVICE

SEQUOIA AND KINGS CANYON NATIONAL PARKS
THREE RIVERS, CALIFORNIA 93271

IN REPLY REFER TO:
L7619

Your reference: 2320

January 7, 1988

Mr. Michael L. Evans
Resource Officer
U.S. Forest Service
Hume Lake Ranger District
35860 East Kings Canyon Road
Dunlap, California 93621

Dear Mr. Evans:

We welcome your letter of December 11, 1987, concerning the Jennie Lake wilderness. We are very interested in developing a cooperative wilderness fire management program for the area.

We feel fuels and vegetation around Jennie Lake should be managed by prescribed natural fire. At the very least, we would like to enter into an agreement that allows lightning fires which originate on the Sequoia National Forest to spread onto Sequoia National Park under prescribed conditions. Such actions could save you suppression dollars and help preserve our natural fire cycle.

We should also discuss the reasons for planned ignitions in wilderness. We do such burns for hazard reduction; it would be useful for the two agencies to develop similar rationales for this area. In addition, we need to develop an interpretive statement to explain to the public the differences in policies between the Agencies. This should include your 100 acre restrictions and the differences in the use of prescribed ignitions.

When you get to the point of needing input from my staff, please contact Mike Warren, Fire Management Officer, and Tom Nichols, Environmental Specialist. They will be glad to assist you in the development of a wilderness fire management plan.

Sincerely,

K. D. Bachmeyer

Kenneth D. Bachmeyer
Acting Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
SEQUOIA AND KINGS CANYON NATIONAL PARKS
THREE RIVERS, CALIFORNIA 93271

IN REPLY REFER TO:

December 14, 1987

☐ DR
☐ EMO
☑ RO
☐ TMO
☐ BMGT

12/87

☐ FILE
☐ POST
☐ CC

SEQUOIA NF
RECEIVED

Michael L. Evans, Resource Officer
U.S. Forest Service
Hume Lake Ranger District
35600 E. Kings Canyon Road
Dunlap CA 93621

In reply to 2320

Dear Mike:

I'm happy to see that the direction for fire management in the Jenny Lake wilderness parallels closely that in the adjacent areas of Kings Canyon National Park. If the final Wilderness Management Plan for this area does provide for the use of prescribed fires to enhance wilderness values, then our fire management policies in these adjacent areas will be very similar. While the definitions under the Forest Service objectives for fire management vary somewhat from those in the National Park Service, i.e.: the Forest Service apparently considers prescribed fires to include those started by natural ignition, while the Park Service differentiates prescribed fires as being ignited by managers, and natural fires to be those ignited by lightning and other natural causes. The definitions do not really seem to preclude our operating in much the same manner. In the Fire Management Zone 1 of Sequoia-Kings Canyon National Park, "natural fires are allowed to play as natural a roll as possible; prescribed fire is allowed only along zone/park boundaries to contain natural fires to the zone; human-caused fires fire suppressed, unless they have no potential to spread." In other words, we let lightning caused fires in the vast majority of the National Parks to burn virtually unabated unless they threaten developments or human life or threaten to escape from the natural fire zone. In addition, we limit prescribed burning (those that we deliberately set) to the boundaries of the zone or park within Fire Management Zone 1, whereas in much of the front country areas of the park, prescribed burns are used throughout the zone to try to return it to as natural a state as possible with the ultimate goal of permitting natural fires to burn virtually unabated in those zones.

So, what it all boils down to is that if the Jenny Lake Wilderness area arrives at the state where natural fires will be generally allowed to burn unabated and prescribed burns can be set by managers to achieve some of the effects of natural fires, then we will be operating in a very similar

manner. The park of course would be pleased if we did not have to suppress natural fires along the adjacent park-forest boundary in this area, and hopefully, an agreement could be reached in which natural fires on the lands of one agency would be allowed to spread onto those of an adjacent agency in this area. This mutual recognition of the values of natural fire in non-timber producing areas would simplify fire management for both agencies. And since the Jenny Lake-Bell Canyon area is particularly susceptible to lightning-caused fires, I think there would be a considerable savings in firefighting funds through this mutual accord.

I hope you have sent a copy of your letter and request to the Park Fire Management Officer, Mike Warren, at Ash Mountain for comment, although I feel certain that he will feel as I do - that the arrangement in the Jenny Lake Wilderness would be to our mutual satisfaction.

Good luck with the project, and if I can be of further assistance, please contact me.

Sincerly,

Robert G. White
District Ranger

California Wilderness Coalition

2655 Portage Bay East, Suite 5 • Davis, California 95616 • (916) 758-0380

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Citizens for Mojave National Park
Committee for Green Foothills
Committee to Save the Kings River
Concerned Citizens of Calaveras Co.
Cuyamo Valley Audubon Society
Conservation Call
Cuyamo Wetlands Associati on
Davis Audubon Society
Defenders of Wildlife
Desert Protective Council
Ecology Center of Southern California
El Dorado Audubon Society
Environmental Protection Information Center
Forest Alliance
Friends Aware of Wildlife Needs
Friends of Plumas Wilderness
Friends of the Earth
Friends of the River
Friends of the River Foundation
Golden Gate Environmental Law Society
Granite Chief Task Force
Greenpeace
Ish Task Force
Kaweah Group, Sierra Club
Keep the Sespe Wild Committee
Kern Audubon Society
Kern Plateau Association
Kern River Valley Wildlife Association
Rhassack Section, Bay Chapter, Sierra Club
Lake Tahoe Audubon Society
Loma Prieta Chapter, Sierra Club
Los Angeles Audubon Society
Marble Mountain Audubon Society
Marin Audubon Society
Marin Conservation League
Mendocino Environment Center
Merced Canyon Committee
Mono Lake Committee
Monterey Peninsula Audubon Society
Morro Coast Audubon Society
Mt. Shasta Audubon Society
Mt. Shasta Recreation Council
Natural Resources Defense Council
NCRCC Sierra Club
Northcoast Environmental Center
N.E. Californians for Wilderness
Orange County Sierra Singles
Pasadena Audubon Society
Peppermint Alert
Placer County Conservation Task Force
Planning and Conservation League
Pomona Valley Audubon Society
Porterville Area Environmental Council
Redwood Chapter, Sierra Club
The Red Mountain Association
Salmon Trollers Marketing Association
San Diego Chapter, Sierra Club
San Francisco Ecology Center
San Joaquin Wilderness Association
Sea and Sage Audubon Society
Sierra Association for Environment
Sierra Treks
Siskiyou Council
Siskiyou Mountains Resource Council
South Fk Trinity Watershed Association
South Fork Watershed Association
Stockton Audubon Society
Trinity Alps Group
Tulare County Audubon Society
U.C. Davis Environmental Law Society
The Wilderness Society
Wintu Audubon Society

December 28, 1987

Michael L. Evans, Resource Officer
Hume Lake Ranger District
35860 E. Kings Canyon Road
Dunlap, CA 93621

Dear Mr. Evans:

Thank for your letter inviting our comments on a fire management strategy for the Jennie Lakes Wilderness.

In a first for the California Wilderness Coalition, our Board of Directors met in the Jennie Lakes Wilderness this past August. As a result, we are more familiar with the area than we might otherwise be.

Generally, the California Wilderness Coalition does not oppose prescribed fires in wilderness areas. For years we have argued that the Wilderness Act of 1964 allows such management, and committee reports accompanying subsequent legislation [e.g. the Endangered American Wilderness Act of 1977 and the California Wilderness Act of 1984] also have stated this.

The purpose of such prescribed burning is the most important factor. Burning to increase forage for grazing, for example, clearly would not be allowed. But planned fires considered necessary to bring the area back to a condition where natural fires again can be allowed to burn would be allowed. The goal is to reduce fuel loads resulting from decades of fire suppression to that believed to approximate natural conditions.

Unfortunately, the more we learn about prescribed burning, the more problems that arise. Care must be taken so that the flora and fauna is not manipulated to

create an ecosystem that would not have arisen under natural conditions. For example, burning during certain seasons or at particular temperatures over a period of time could result in vegetation that would not likely have resulted from natural fire. And despite usual analyses of wildlife, deer are not the only or most important species in a forest. Consideration of other species, including those who might be harmed by fires, needs to be done.

Air quality is another consideration. Our climb of Mt. Mitchell was somewhat disappointing due to the poor view resulting from prescribed fires in the national park. Of course, views were even worse in most of the state in September due to natural fires. Nevertheless, visitors need to be informed of the program so that they will be more understanding of the need for prescribed burning. It would even be desirable to try to alert potential visitors of the plan in advance of their visit so that they may chose to travel to another area.

Since the National Park Service already is burning near the Jennie Lakes Wilderness, we trust that coordination with park managers will be a part of your fire management strategy.

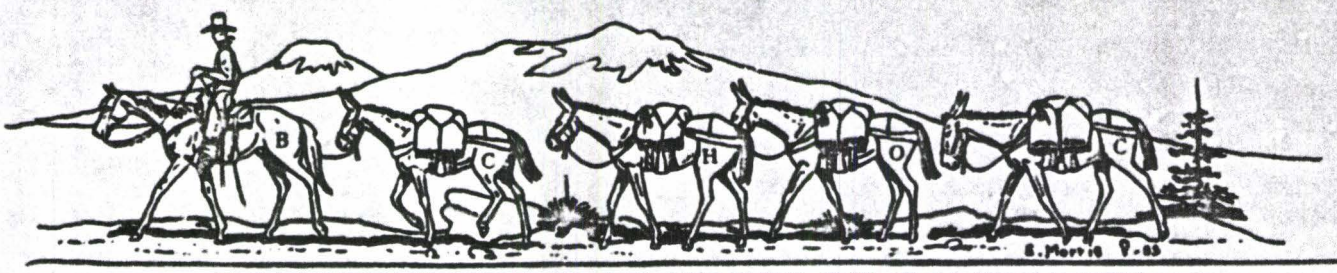
In conclusion, the California Wilderness Coalition supports prescribed burning in wilderness areas under certain circumstances, but we do have concerns about the manner and degree of such burns. We would be most interested in reviewing any environmental analysis developed for your fire management strategy.

Thank you for contacting us about this issue.

Sincerely,

Jim Eaton

Jim Eaton
Executive Director



BACKCOUNTRY HORSEMEN OF CALIFORNIA

HSSUA - Tulare/Kings
HSSUA - Kern
HSSUA - Kern Valley
HSSUA - Fresno, Madera
Mariposa
Mother Lode Chapter

January 7, 1988

Michael Evans,
Resource Officer
Sequoia National Forest
Hume Lake Ranger District
35860 East Kings Canyon Road
Dunlap, CA 93621

Re: Correspondence dated December 11, 1987
Relative to Fire Management Strategy for
Jennie Lakes Wilderness

Dear Mr. Evans:

Your letter addressed to the High Sierra Stock Users Association dated December 11, 1987, was sent to Post Office Box 1632 in Porterville and then forwarded to me. I received it on January 4, 1988. For that reason I was unable to respond by the date of January 1, 1988, requested in your letter.

I had the following comments on the proposed fire management strategy described in your letter:

1. In the event that planned ignitions are scheduled adequate notice should be given, in both the newspaper and in special mailings, to user groups so that vacation trips can be planned accordingly.

2. In the event that planned ignitions are contemplated in areas that are popular for recreation use, attempts should be made to schedule the ignitions at times when recreational use is at its lowest point.

On behalf of the High Sierra Stock Users Association/Backcountry Horsemen of California we appreciate

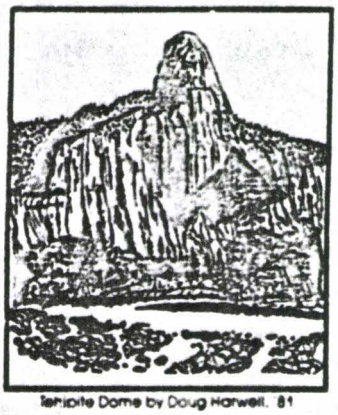
being provided the opportunity to comment on your fire management strategy for the Jennie Lakes Wilderness. We may have other ideas in addition to those described above and we would like to be able to forward them to you.

The above comments are being offered by the Public Lands Committee of the High Sierra Stock Users Association/Backcountry Horsemen of California.

Very truly yours,

RICHARD H. COCHRAN
Chairman

RHC;cc
cc: Public Lands Committee



Tehipite Dome by Doug Harwell, 81

Tehipite Chapter • Sierra Club

To explore, enjoy and preserve the nation's forests, waters, wildlife and wilderness.

January 17, 1988

Michael L. Evans
Resource Officer
Hume Lake Ranger District
35860 E. Kings Canyon Road
Dunlap, CA 93621

Re: Fire Management Strategy for Jennie Lakes Wilderness (2320).

Dear Mr. Evans:

I apologize for not responding to your letter before January 1. I consider fire to be an integral part of the ecology within wilderness. I also understand that fire supression in the past has allowed unnatural conditions to develop within wilderness areas. To restore areas to natural conditions I agree that prescribed burns may be (probably are) necessary. Some fuel buildups may be natural and care should be taken to identify whether the cause is natural or whether the buildup is caused by fire supression outside of the wilderness area.

Thank you for asking for our opinions and I will try to reply faster in the future.

Sincerely,

John Rasmussen
Chair - Tehipite Chapter

P.O. Box 5396, Fresno, California 93755 209-233-1820

SIERRA CLUB KERN-KAWEAH CHAPTER

182 East Reid Ave.
Porterville CA 93257
January 1, 1988

Michael L. Evans
Resource Officer
Hume Lake Ranger District
35860 E. Kings Canyon Rd.
Dunlap CA 93621

Re: Fire management strategy for Jennie Lakes Wilderness

Dear Mr. Evans;

In general, the Sierra Club agrees that fire is a valid management tool for wilderness management. Historically, lightning caused fire naturally reduced buildups of fuels. In principle, then, we would agree that in the absence of unusual circumstances, the management direction allowing naturally occuring fires to burn in Wilderness as long as their potential size would not generally exceed 100 acres, would not escape the wilderness, and would not present a safety hazard, is desireable.

The planned ignition of fires to enhance wilderness values is more ambiguous. It depends on who defines "wilderness values." For example, using fire as a tool to clear areas so as to provide more grazing land for cattle would be more controversial than a planning a small control burn to reduce potential fire hazards in a manner emulating a natural fire. Therefore, each planned use of fire as a tool to manipulate the Wilderness would have to evaluated on a case by case basis.

There are studies available which discuss the importance of the timing (season) that control burns are initiated, and which offer conclusions as to the benefits and impacts of burning. We have not studied these thoroughly, nor do we have a set policy which reflects these latest studies. Hopefully we will be formulating such a policy in the future. I assume that you will be incorporating the latest research into your studies and Management Plan.

Please keep us informed as you progress in writing the fire management strategy and ultimately the Wilderness Management Plan for the Jennie Lakes Wilderness. As you formulate more concrete details, we may have more specific comments to make.

Thank you for the opportunity to comment.

Sincerely,

Carla Cloer

Carla Cloer

SEQUOIA
KINGS
CANYON
NATIONAL PARKS

SEQUOIA GUEST SERVICES

December 25, 1987

Mr. Michael L. Evans
Resource Officer
USDA
Forest Service
Hume Lake Ranger District
35860 E. Kings Canyon Road
Dunlap, CA 93621

Ref: 2320

Dear Mike:

I agree with your proposal on fire management plan for the Jennie Lakes Wilderness. I am aware of the National Park Service fire management program for Sequoia-Mixed Conifer Forests.

As a wilderness area the Jennie Lakes area should be allowed to be naturally managed where possible. My only problem with planned and unplanned burns begins with defining what is or was natural prior to human intervention, either Native American or fire suppression from the past 50-70 years.

Secondly, I firmly believe a strong research and inventory program should coincide with your plan to insure the compilation of data necessary to determine when and where the "natural" conditions are met and all future ignitions are of the unplanned source.

I can understand the difficulty of defining natural conditions as being nearly impossible. If so, I would recommend only planned ignitions around the border of the wilderness area to prevent fire intrusion into or escape from the wilderness zone.

Another alternative would be since we have only suppressed fire for the past 50+ years or so and I am unaware of the fires in this area over that 50+ year period, I submit this is a very short time frame in the life of the forest. Instead of spending funds trying to determine the natural state we might assume it is natural at this point.

Anyway Mike, it will be your headache to reach those determinations. I trust in your experience and that of the Forest Service to reach a decisi n. As I see it, there is no right or wrong answer, only a tremendous amount of variables to consider.

Thank you for the opportunity to respond.

Sincerely,

Robert J. Seney
General Manager

TULARE COUNTY
DEPARTMENT OF HEALTH SERVICES

Ronald W. Probasco
Director

December 15, 1987

Michael L. Evans
Hume Lake Ranger District
35860 E. Kings Canyon Rd.
Dunlap, Ca. 93621

Re: Jennie Lakes Wilderness

Dear Mr. Evans:

The Tulare County Air Pollution Control District has received your fire management strategy for the Jennie Lakes Wilderness. The policy of allowing small planned and unplanned fires to enhance wilderness values should not pose an adverse air quality impact. Therefore the District has no comments to the proposed strategy.

If you should have any further questions, please contact this office at (209) 733-6438.

Sincerely,

Martin O'Keast

Martin D. Keast
Environmental Health Engineer

MDK:st

Air Pollution Control
(209) 733-6438

Environmental Health
(209) 733-6441

PLEASE REPLY TO:

TULARE COUNTY AIR POLLUTION
CONTROL DISTRICT
HEALTH DEPT., CO. CIVIC CENTER
VISALIA, CA. 93291

STATE OF CALIFORNIA—THE RESOURCES AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF FISH AND GAME
1416 NINTH STREET
SACRAMENTO, CALIFORNIA 95814

P.O. Box 4437
Visalia, CA 93278

December 28, 1987

Mike Evans, Resource Officer
Hume Lake Ranger District
Sequoia National Forest
35860 E. Kings Canyon Road
Dunlap, CA 93621

Subject: Fire Management Strategy for the Jennie Lakes Wilderness

Dear Mike:

Thank you for the opportunity to comment on your fire management strategy for the Jennie Lakes Wilderness. Generally, the Department of Fish and Game supports the use of fire because it is a natural process in which dense forest and decadent brush can become more usable to wildlife. Effective fire suppression methods have reduced the amount of quality habitat available, and have increased the chances of wildfires that could burn areas that are too large to be fully usable.

The Department is in favor of allowing lightning-caused fires to play their natural ecological role within wilderness areas. But in the event that the Forest Service decides to ignite a fire to enhance wilderness values, there are some wildlife issues that should be considered.

Two major migration corridors of the Hume deer herd converge within the Jennie Lakes Wilderness. Special consideration should be given to the requirements of migrating deer in planning a prescribed fire. Deer migrating in the spring need nutritious, high protein feed which they get in the form of grasses, forbs, and the new shoots of browse species. Deer migrating in the fall feed mainly on acorns, and the tips of browse species. Mosaic fire patterns and protection of oaks would be beneficial to migrating deer.

We would be happy to work with you if you ever decided to plan for a prescribed burn. I would like to be notified when the final draft is completed so that I may review it. If you have any questions, please don't hesitate to contact me.

Sincerely,

Gail Presley
Wildlife Biologist

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HUME LAKE RANGER DISTRICT
35860 E. KINGS CANYON RD.
DUNLAP, CA. 93621

REPLY TO: 2320

DATE: December 11, 1987

Perry Morris
Outward Bound
0110 S. W. Bancroft St.
Portland, OR 97201

Dear Mr. Morris:

I am presently preparing a fire management strategy for the Jennie Lakes Wilderness. This strategy may also evolve into an interim fire management plan pending the development and approval of a Wilderness Management Plan for the Jennie Lakes Wilderness. I would appreciate your involvement in the development of this fire management strategy, but first, let me provide a little background.

The Final Forest Land and Resource Management Plan (LMP) for the Sequoia National Forest is scheduled to be approved in the Spring of 1988. Management Direction contained in the Draft Land and Resource Management Plan issued in November 1985 would permit the use of prescribed fires to enhance wilderness values, and also states managers may use planned and unplanned ignitions in the management of wilderness.

This direction meets the Forest Service objectives of fire management in wilderness to:

1. Permit lightning caused fires to play, as nearly as possible, their natural ecological role within wilderness.

2. Reduce, to an acceptable level, the risks and consequences of wildfire within wilderness or escaping from wilderness.

Under specific conditions, qualified Forest Service Officers could ignite a prescribed fire in wilderness to reduce unnatural buildups of fuels to meet the objectives stated above.

The preferred alternative of the Draft Land and Resource Management Plan allows prescribed fires to burn as long as their potential size would not generally exceed 100 acres, would not escape the wilderness, and would not present a safety hazard. These fires could be ignited by managers (planned ignition) to enhance wilderness values, or be ignited naturally by lightning (unplanned ignition).

Given this brief background, I hope you will take a few minutes to let me know your thoughts and concerns about fire management within the Jennie Lakes Wilderness. I have enclosed a map for your reference along with a stamped return envelope. If you only have a few comments you may wish to just put them at the bottom of this letter and return it to me. If you have no comments, I would like to know that too. If you wish, you may contact me by phone at (209) 338-2251. In order to complete this project in a timely manner, it would be very helpful to receive your comments by January 1, 1988.

Sincerely,

Michael L. Evans

MICHAEL L. EVANS
Resource Officer

Enclosures

I agree with your plan as long as it does not restrict Backcountry use.

Barry Norris

UNITED STATES
DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HUME LAKE RANGER DISTRICT
35860 E. KINGS CANYON RD.
DUNLAP, CA. 93621

REPLY TO: 2320

DATE: December 11, 1987

Mr. Alvin B. Miller
Exeter Sportsmen's Association
P.O. Box 941
Exeter, CA 93221

Dear Mr. Miller:

I am presently preparing a fire management strategy for the Jennie Lakes Wilderness. This strategy may also evolve into an interim fire management plan pending the development and approval of a Wilderness Management Plan for the Jennie Lakes Wilderness. I would appreciate your involvement in the development of this fire management strategy, but first, let me provide a little background.

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Given this brief background, I hope you will take a few minutes to let me know your thoughts and concerns about fire management within the Jennie Lakes Wilderness. I have enclosed a map for your reference along with a stamped return envelope. If you only have a few comments you may wish to just put them at the bottom of this letter and return it to me. If you have no comments, I would like to know that too. If you wish, you may contact me by phone at (209) 338-2251. In order to complete this project in a timely manner, it would be very helpful to receive your comments by January 1, 1988.

Sincerely,

Michael L. Evans

MICHAEL L. EVANS
Resource Officer

Enclosures

12-28-87

Mr Evans:

Thanks for the opportunity to review the Fire Service, fire managment program. I fully agree with this plan.

Thanks

Ron B. Miller
Box 941
Exeter ca 93221

Oil and Gas Impacts on Perceived Wilderness Qualities in the Indian Mounds Wilderness Area

by

Kent E. Evans
Resource Assistant
Yellowpine Ranger District
Sabine National Forest
P. O. Box F
Hemphill, Texas 75948
(409) 787-3870

This study was prepared as a student project in partial fulfillment of the Professional Development for Outdoor Recreation Mangement program at Clemson University. It in no way reflects USDA Forest Service policy nor are the opinions expressed those of anyone other than the author.

Author: Kent E. Evans
Resource Assistant
Yellowpine Ranger District
Sabine National Forest
P.O. Box F
Hemphill, TX 75948

Title: Oil and Gas Impacts on Perceived Wilderness Qualities in the Indian Mounds Wilderness Area

Abstract: In October 1984, Congress established the 9,946 acre Indian Mounds Wilderness Area on the Sabine National Forest in deep east Texas. This was an area recommended as non-wilderness following the RARE II effort by the Forest Service. Several citizens groups led a concerted effort to designate the wilderness in spite of considerable prior impacts, existing roads, and ongoing oil and gas development. Approximately, 85 percent of the area is subject to oil and gas drilling because of valid existing rights. A description of the wilderness values in the area was developed from the proponents views recorded in the media and through personal visits with local proponents. This description of the proponents perceived wilderness qualities depicts the area as a good example of an east Texas pine/mixed hardwood forest that is nearing maturity. The proponents feel that the area's contiguous stands of 50 to 60 year old trees provide an adequate setting for pursuing their desired wilderness experiences (i.e. being alone, observing bird life, viewing large stands of trees free of clearcutting.)

The impacts of oil and gas development on these perceived values were considered. Wilderness proponents favor intensive rehabilitation of disturbed areas to promote rapid recovery of the wilderness. Mitigation measures were suggested to protect the wilderness and promote rapid recovery within the constraints of state and federal law and rights provided the mineral owner in the terms of his deed.

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Acknowledgements

I would like to thank the staff of the Yellowpine Ranger District for their support during the last several months. Special gratitude goes to those ladies who typed several revisions of the manuscripts, Gayle Ladner, Vera Crouch, Carmen Mooney and Ginger Brackin. Their typing was accomplished in between the other duties that beset a district office.

I also appreciate the constructive review of the manuscript by David Dailey and Harry Switzer of the Forest Supervisor's Staff. Assistance in map production was given by the able VIS man, Dale Bounds.

Most importantly, my wife and kids deserve more than a few lines of prose expressing how much I appreciate their encouragement and understanding. Most of this project was accomplished on "their time".

Dedication

To my Mom and Dad

OIL AND GAS IMPACTS ON PERCEIVED WILDERNESS QUALITIES IN THE INDIAN MOUNDS WILDERNESS AREA

INTRODUCTION

On October 30, 1984, Public-Law 95-574,98 Stat. 3051, established the 9,946 acre Indian Mounds Wilderness Area (Appendix-A). This was one of five new areas totaling 34,346 acres established on National Forest land in East Texas in 1984. The Indian Mounds Area was recommended as non-wilderness by the Forest Service following its Roadless Area Review and Evaluation (RARE II) process. However, several citizens groups in Texas led a concerted effort to designate the area as wilderness, resulting in its present status.

A unique feature inside the Indian Mounds Wilderness, and the principle reason for this paper, is the presence of ongoing oil and gas development. This development is a valid existing right, specifically allowed in the legislation. The wilderness qualities which exist in the area are being impacted by an activity not usually associated with wilderness. Oil and gas development has the potential to permanently alter natural landforms, radically change soil fertility, and pollute surface and subsurface water sources. However, less severe damage can result when development is by a prudent oil company in concert with guidance from a resource management team.

This paper will identify and describe those wilderness qualities which are perceived in the area by proponents of the Indian Mounds Wilderness. The paper will discuss mitigating the adverse oil and gas impacts to protect these perceived wilderness qualities.

Description of the Area

The Indian Mounds Wilderness Area is located on the 104,000 acre Yellowpine Ranger District of the Sabine National Forest. The Forest is in the southeastern part of Texas, generally referred to as Deep East Texas (Figure 1). Houston is 180 miles southwest of the forest; Dallas is 275 miles to the northwest. The eastern boundary of the forest adjoins Toledo Bend Reservoir, which serves as the state boundary with Louisiana. Hemphill, the county seat of Sabine County, is located 5 miles west of the Indian Mounds Area.

The climate is characteristically hot and humid in the summer with a mean maximum July temperature of 93° F. The majority of the 57 inch average rainfall comes in spring and fall. Heavy thunderstorms are common during frontal passages in these seasons. Winters are mild and short, with a mean minimum temperature in January of 39° F. The growing season averages 240 days.

The wilderness is bisected by 3 major corridors: state highway FM 3382, gravel Forest Service Road 115, and a 150 ft. wide pipeline right-of-way. The roads carry an assortment of recreation, farm, oil-field, residential, and logging traffic. The largest contiguous acreage of this wilderness without a corridor is about 4,000 acres. Two subdivisions and one marina adjoin the wilderness with about 30 residents in each area.

The Sabine National Forest is located in the Pineywoods vegetation area of Texas (Gould, 1975). Most of the wilderness is dominated by loblolly and shortleaf pine approximately 50 years old. The wilderness, like most of

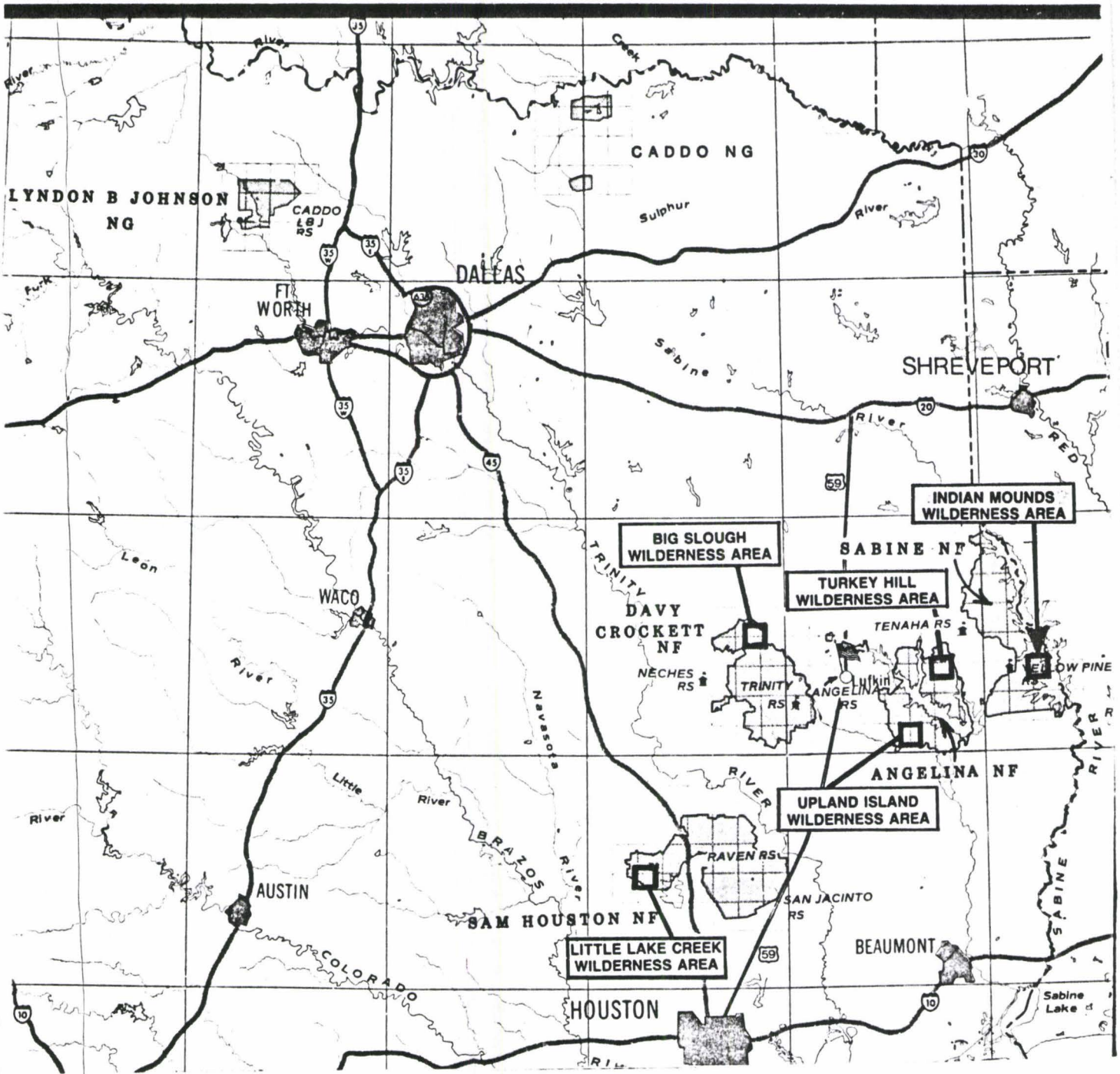

Figure 1. Location of five wilderness areas established 10-30-84, on the National Forests in Texas.

east Texas, was heavily logged in the 1920's. The existing timber stand is the result of voluntary regeneration and 50 years of management by the Forest Service. About 1500 acres of the area is dominated by upland hardwoods, primarily red oak, white oak, sweet gum and hickory. Bottomland hardwood stands containing water oak, cherry-bark red oak, black gum, and magnolia occur on about 300 acres. Roughly 300 acres of the area is in pine regeneration area, having been logged the past 10 years.

The wilderness wildlife populations are fairly typical of the Sabine National Forest (USFS,1977). The list of known species include 259 birds (64 yearlong residents), 45 mammals, 87 reptiles, and amphibians and 88 fish. Two endangered birds are known in the area, the bald eagle and red-cockaded woodpecker. The eagles are winter visitors to the Toledo Bend area. The woodpeckers have established one colony in a stand of mature shortleaf pine inside the wilderness. All of this bird life is found in other parts of the forest. The Yellowpine District has approximately 20 red-cockaded woodpecker colonies.

Status of Oil and Gas in the Indian Mounds Area

The Sabine National Forest was purchased by the federal government from various private owners in the mid-1930's. This resulted in a variety of mineral ownerships under the Forest. Three basic mineral ownerships are found in the Indian Mounds Wilderness.

1. U.S. Minerals - The mineral estate was purchased with the surface by the U.S.
2. Outstanding Minerals - The mineral estate was severed from the surface estate prior to acquisition by the U.S.

3. Reserved Minerals - The seller retained the mineral estate when he sold the surface estate to the U.S. In most cases the minerals would revert to government ownership after a specified time period.

Surface activities by reserved mineral owners were made subject to the Rules and Regulations of the Secretary of Agriculture of 1911 (Appendix B). Surface activities on outstanding minerals in the area are regulated by state law, not federal, since the mineral estate was severed prior to surface acquisition (Table 1).

Approximately 60,000 acres of the Yellowpine District was purchased in 1936, from one land owner. About 9,600 acres of that purchase was in the wilderness. The deed conveying the lands from that owner to the government reserved "all oil, gas and other valuable minerals" by the vendor for 50 years, ending 1-1-85. The deed allowed the "full right to enter" and to "prospect for and develop" those minerals "on, in and under" those lands (Sabine Co., TX Deed records). Further stated in the deed was a provision that any oil or gas well in production on 1-1-85 would reserve a 1/2 mile radius of mineral rights for another five years. The reserved acreage around each producing well would revert to U.S. ownership on 1-1-90, if the well went dry.

The drilling and exploration of reserved minerals in the Indian Mounds began several years prior to the designation of the new wilderness. The Indian Mounds area was intensively prospected with approximately 120 miles of shothole seismograph lines. By the time wilderness designation was finalized, the Indian Mounds had 18 wells drilled in it and several adjacent to it. By 1-1-85 producing wells reserved about 2750 acres inside the new wilderness area for future development by the reserved mineral owner. (Figure 2).

Table 1. Status of mineral ownership in the Indian Mounds Wilderness Area.

Status	Authority over Development	Acreage[1] 12-31-84	Acreage 1-1-85	%of Area 1-1-85
Reserved in Perpetuity	D[2] , Tx[3] , SR[4]	2800	2800	28
Outstanding	Tx	2900	2900	29
Reserved Subject to Reversion	D, Tx, SR	3750	2750	28
U.S. Ownership	US[5]			
Existing leases		500	500	5
No leases		-	1000	10

[1]Acreage estimates are pending title review by OGC.
[2]Deed of conveyance.
[3]State of Texas Law.
[4]Secretary of Agriculture's Rules and Regulations of 1911.
[5]U.S. Government, leased prior to wilderness designation.

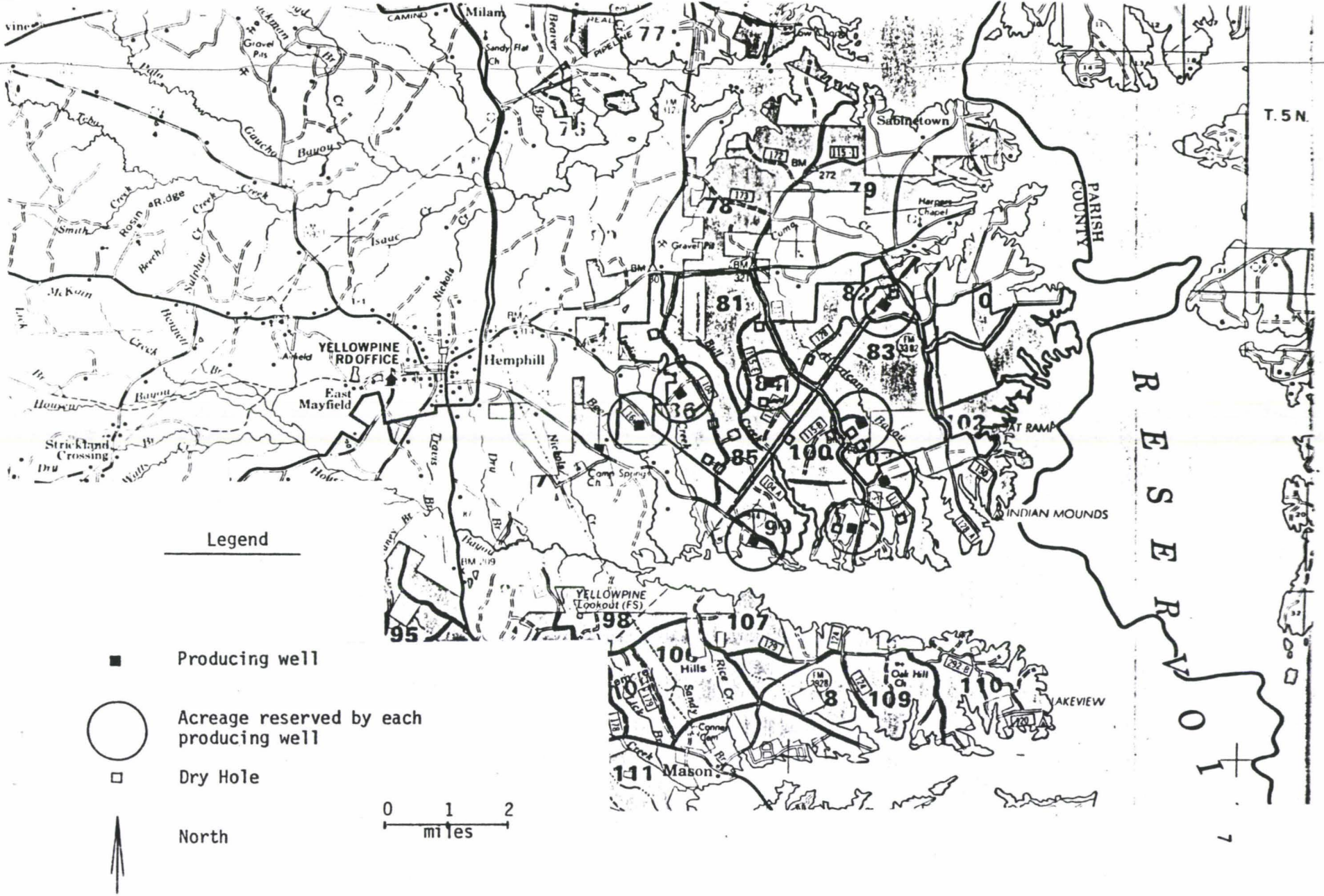

Figure 2. Location of well sites in and around the Indian Mounds Wilderness Area.

Roughly 85 percent of the wilderness area is still available for oil and gas development. The only area excluded for development currently is about 1500 acres of U.S. minerals which reverted to the government on 1-1-85. These lands will not be leased. The existing U.S. leases, about 500 acres, would not be released if they expire without development.

The discovery of oil and gas in the area suggests that all private mineral rights and existing U.S. leases will be developed. The challenge facing the Forest Service is to protect the wilderness values to the extent possible while oil and gas development proceeds within it.

OBJECTIVES

The objectives of this paper are:

1. Describe the wilderness qualities perceived by proponents of the Indian Mounds Wilderness Area.
2. Identify which aspects of oil and gas development adversly impact those wilderness qualities.
3. Identify those activities that can be mitigated within the constraints of relevant deeds and law.
4. Recommend management actions to protect the wilderness during oil and gas development.

PROCEDURES

This paper employed the following data gathering methods to meet the objectives of the study.

1. Review literature to describe wilderness qualities relevant to the Indian Mounds Wilderness Area.

2. Review relevant deeds, law, and Forest Service documents concerning oil and gas development by a reserved mineral owner in Texas.

3. Interview local proponents of the Wilderness to define their perceptions of the qualities.

These information sources were used to develop a rough description of the wilderness qualities that were perceived by proponents of the Indian Mounds Wilderness Area. The review also identified those oil and gas activities that could be mitigated to protect existing wilderness qualities. The personal visits with local proponents of the wilderness allowed a refinement of the perceived wilderness qualities. The conversations also helped verify which oil and gas activities were adverse to wilderness qualities.

These procedures employed a type of analytic inductive reasoning described and used by Bryan (1979). Bryan points out that strictly representative samples are not required for either the initial observation stage or verification stage of research. A meaningful product can result from using a relatively small sample size and building a description around those samples.

Personal contacts were designed to avoid conflicts with OMB regulations on interviews and public involvement. Conversations with the local citizens were conducted in a very unstructured, casual format. The author selected which citizens to visit based on their known support for the wilderness area. The visit was initiated by an offer to provide them with a look at a topographic map showing the boundaries of the wilderness and of the oil

and gas development. As the features were explained, the citizens volunteered their views about the new wilderness area, oil and gas development, and the Forest Service. The visits lasted from one to two hours. The author made notes of the citizens comments after leaving. The author did not attempt to persuade or modify any of the views expressed during the conversations.

LITERATURE REVIEW

Wilderness Qualities in the Indian Mounds Area

To protect a wilderness during oil and gas development a resource manager should have an understanding of which wilderness qualities are threatened. According to the Wilderness Act of 1964, a wilderness is an area which is untrammeled by man, land which has retained its primeval character and influence, without permanent improvements. In 1975, an amendment to the 1964 Wilderness Act was passed by Congress. This act identified a need to add areas to the National Wilderness Preservation System, particularly in the East. The criteria for considering areas was to consider roadless areas that would not normally fit the criteria given in the 1964 Act. This was due to more limited opportunities for inventory consideration in the East, the faster regenerative capacity to wilderness or near wilderness, and need for wilderness close to populated areas (USFS, 1979).

The basic criteria for wilderness in the East were identical to those elsewhere except that consideration was given to areas that didn't exceed more than one of the following:

1. - 1/2 mile of improved road for each 1,000 acres.
2. - 15% of area is in non-natural planted vegetation.
3. - 20% of area has been harvested within past 10 years.
4. - Area could contain a few dwellings if dwellings and access are obscured by natural features.

Using the RARE II process, the Forest Service concluded that the Indian Mounds area did not fulfill the criteria or intent of the 1975 amendment.

As prescribed by RARE II, the Forest inventoried and evaluated all lands in East Texas for inclusion to the National Wilderness Preservation System. In 1978, a Forest Service evaluation team made up of Landscape Architects, Foresters, and Recreation Specialist rated the Indian Mounds Area using a system known as the Wilderness Attribute Rating System. Their evaluation covered about 14,000 acres, including the core of the current 9,946 acre wilderness. By 1978, the team noted that the area had already experienced extreme impacts to its natural processes. The area had several roads through it, 150' wide pipeline right-of-way, and several utility rights-of-way. A "high" prior influence was noted in the area by these "physical developments" and "vegetation manipulation".

The most widespread prior influence on the area was logging. By 1930, the area had been intensively logged. Evidence of the past logging activity include the old flattened grades of narrow gauge railroads with their debris of rotted crossties, iron spiked and occasional iron track. One long-time resident of the Indian Mounds area remembered the timber stand prior to 1930.

He described the area south of highway 83 east of Hemphill (currently in wilderness), as very different from the present. Before it was logged, the area was dominated by mature longleaf pine. Longleaf covered all the high ground. Loblolly pine and beech were found down in the creek bottoms. He also recalled the area had virtually no shrubs since it was burned every year or two by the people who ran livestock over the area (Luther Wood, pers. comm.). The presence of large, open understory stands of mature longleaf resulted from hundreds of years of regular burning by native Americans prior to white man's settlement. The current stand of National Forest timber in the wilderness is the result of 50 years of management by the Forest Service.

The 1978 review further described the area as having a "very low" ability to provide solitude. The opportunity to experience primitive recreation was "low". The team gave the areas attributes of ecological, geological, scenic or cultural value as "infrequent". The single significant ecological attribute was the presence of one red-cockaded woodpecker colony.

At the time of the evaluation the apparent naturalness of the area had a "high" or "very high" impact rating because of mineral developments, vegetation manipulation and roads.

The 1978 review team did not recommend the Indian Mounds to wilderness because of such things as the high prior impacts in the area. The area was not recommended for wilderness in RARE II, but was put into a category for uses other than wilderness. But their recommendation does not mean

that the area was entirely void of wilderness qualities. The 1984 designation resulted because a different set of standards were applied by the citizens groups to recommend the area for wilderness. The citizens employed a liberalized concept of wilderness to include an area that would satisfy their purposes.

Forest Service recreation researchers have recognized that a new concept of wilderness is responsible for designation of new areas, particularly in Regions 8 and 9. Hendee (1980) recognized that wilderness is evolving to a liberalized and expanded concept. Wilderness designations in the East, he points out, are notably different from western wilderness areas in such key attributes as size, naturalness, and solitude.

This liberalized concept of wilderness may explain a criterion for wilderness designation as a place where a specific wilderness experience can be pursued. Roggenbuck (1980) found that on both sides of the country wilderness visits were to enjoy scenery, learn about and experience nature, for physical challenge and to escape physical, social and mental stress.

Proponents View of Indian Mounds Wilderness Qualities: Media Records

Media records provide a good insight to the proponents view of wilderness in Texas. These citizens assembled a fact sheet (Citizens, 1983) which characterized their perceived attributes of the Indian Mounds and other areas in the state. The media record also suggests that the citizens desire for wilderness designation was motivated by two things: wilderness

attributes and a desire to halt Forest Service management activities such as clearcuts. Their proposed areas were described as beautiful, diverse, distinctive, containing vanishing ecosystems, rare species, 22 champion trees, and numerous scenic vistas. Non-wilderness intrusions were recognized by the group and listed, including; "roads and clearcuts by the USFS". Corridors also exist and are "needed for access to private land".

The single most visible leader of the citizens groups was Mr. Edward C. Fritz, Chairman of the Texas Committee on Natural Resources. His support for wilderness designation was strongly motivated by his desire to stop clearcutting by the Forest Service. The anti-clearcut motive was detected from most of his fellow proponents of the Indian Mounds designation. According to Mr. Fritz, "the principle purpose of a wilderness is to keep it from being clearcut" (Gunter, 1983). He claims that Forest Service management would defraud our natural heritage from learning what the forests were like before they were so heavily clearcut. Specific concerns voiced by Mr. Fritz were that the Forest Service would (1) clearcut every stand of available timber at the end of rotation (2) grow pine on 94% of those regeneration areas (3) burn almost all stands periodically which kill the hardwoods (4) lose species diversity including insects, herbs, microflora and fauna, as well as declines of hardwoods such as beech and magnolia (Fritz, 1981).

Oil and gas development was not tagged as a threat to wilderness. Only the management activities of the Forest Service received that label: "Threats"

to wilderness - Forest service roads, clearcuts, prescribed burning, and regenerating 94% of the areas to pine. The potential for oil and gas development inside these proposed wilderness areas was recognized by the citizens. "Since all minerals are privately owned or leased, exploration and production will continue unabated regardless of designation". (Citizens, 1983).

No record was found of any effort by the citizens to halt future development by forcing minerals acquisition by the U.S. prior to wilderness disignation. The wilderness legislation specifically noted that the administration of the area will be subject to valid existing rights (e.g., oil and gas). The Lone Star chapter of the Sierra Club forwarded their desired wilderness management policy to the Forest Supervisor in a letter, dated 11-12-84. Their desired management policy "in no way prevents or prohibits oil and gas drilling".

The National Forests in Texas hosted a RARE II re-evaluation workshop in Lufkin in 1983, to solicit citizen views for ranking 12 roadless areas into a priority list. This session provided another record of the wilderness proponents view of wilderness attributes present in the Indian Mounds. This gathering brought together representatives of the Sierra Club, Texas Committee on Natural Resources, Texas Parks and Wildlife Department, Audobon Society, East Texas Conservation Society, Forest Service, Wilderness Society, Governor's Office, Texas Forest Service, Deep East Texas Development Association, Sportsmen's Club of Texas, and Texaco.

The working group compiled a list of the most important factors or criteria that should be considered when ranking the 12 roadless areas. Those factors in descending order of importance were:

1. Uniqueness
2. Ecosystems
3. Soil and Water
4. Size
5. Manageability
6. Wildlife
7. Succession
8. Aesthetics
9. Economics
10. Recoverability
11. Societal
12. Lack of use

The response of the working groups showed that they felt the Indian Mounds possessed natural attributes that merited protection of the area. After developing this list of factors, the group submitted a list which ranked the roadless areas for wilderness designation. The Indian Mounds area was ranked first or second by members of the Sierra Club, Audobon Society, Texas Committee on National Resources and the East Texas Conservation Society.

Proponents View of Indian Mounds Wilderness Qualities: Local Citizens

The author made personal visits to the homes of four local citizens who supported the Indian Mounds Wilderness Area. Three of the people are from families that had been in Sabine County for several generations. All of their responses reflected a deep appreciation for natural resources and for their county's forested heritage. They had strong feelings against timber companies that they feel are clearcutting every available acre of private land and managing for short rotation pulp production. They also

dislike Forest Service clearcuts even though the National Forests use a longer rotation favoring growth of larger trees than private companies.

Another significant factor surfaced while engaging these local proponents of wilderness. These citizens want to capture and revive memories of their youth, back when the county had very few clearcuts. It was a time, according to them, when thousands of acres of Sabine County were contiguous forest stands abundant with hardwood. Large pine regeneration areas were not a vivid part of their recollection. These citizens also remember a mature, bottomland hardwood forest that flanked the county line along the Sabine River. This forest had huge hardwood trees with virtually no pine.

The citizens explained that this bottomland hardwood forest was permanently wiped out by a lake they didn't want. Toledo Bend Reservoir completed in 1968, has inundated the entire Sabine County frontage of the old river bottom. The lake is 80 miles long, covering 181,000 acres. It flooded 31,000 acres of prime National Forest bottomland.

Most of the wilderness experiences sought by these citizens could have been satisfied in places outside the Indian Mounds Area 30 years ago. According to these citizens, it is now one of the only places left for their needs.

The author asked these citizens to describe the reasons why they went into the Indian Mounds Area and what they wanted to experience. A summary of their response follows:

1. To be alone.
2. To enjoy the thick canopy and beauty of 50 to 60 year old timber.
3. To be in a quiet place away from city noises.

4. To view wildlife.
5. To view particular hardwoods (i.e., hickory, beech magnolia, white oak, red oak).
6. To view specific forbs (e.g., yellow-ladyslipper orchid).
7. To view and collect fossils.
8. To view and photograph land forms and plants within a 200 yard vista.
9. To show kids several thousand acres of forest that is 50 to 60 years old and its natural processes of decay, regeneration, etc.
10. To see a large stand of timber dominated by hardwoods.
11. To escape all evidence of others.
12. To experience silence.
13. To listen to owls.
14. To refresh memories of youth (e.g., to experience a large uncut acreage of big trees along a creek).

These people all realize the imperfections of the area especially when comparing the Indian Mounds to the Gila or Bob Marshall Wilderness Areas. But to experience the above mentioned items through the next several generations of their families, these citizens believed that wilderness designation was necessary.

DESCRIPTION OF PERCEIVED WILDERNESS QUALITIES

The media records and conversations with the Indian Mounds proponents allowed the following general description of the areas perceived wilderness qualities.

Apparent Naturalness

The single most important quality in the area is the presence of 50 to 60 year old trees. Most of the experiences desired by the proponents required several thousand acres of mature or nearly mature trees. Such a timber stand

is very close to their reference point in describing what natural east Texas is supposed to be. However, all of the proponents seemed to understand that this wilderness area had unnatural intrusions. They expect to seek out the natural, quiet, solitary places for satisfying specific wilderness experiences.

The existing stands of 50 to 60 year old trees provide quiet places where they can experience solitude. The heavy underbrush and dense canopy in the area screen the users from most unnatural developments and from other users. For instance,an oil well is obscured from sight by the surrounding vegetation from less than 150 yards. In spite of surrounding noises, the proponents also view the area as a quiet place. The heavy growth in the area is an excellent sound insulator. Noises from the city, highway and lake are substantially muffled. Heavy traffic on roads through the area is usually not heard over one-half mile through the woods.

The proponents also consider the streams in the area to be in a near natural condition. Most of the streams are free-flowing and have no bridges or culverts in them. These streams host several uncommon plants such as the yellow-ladyslipper orchid. These stream bottoms are key features in the enjoyment of the area because of the bottomland and hardwood species found there.

The wilderness area is partially bounded by a large, manmade lake, Toledo Bend Reservoir. The lake has caused such unnatural intrusions as: outboard

motor noise, trash, and dramatic vegetation changes along the shoreline. One citizen noted these more subtle effects of the reservoir, as well as the unnatural increase in waterfowl and eagles in the wilderness. The lake is seldom mentioned by the wilderness proponents as adversly affecting their wilderness experience.

Before oil and gas development accelerated, the most unnatural feature in the Indian Mounds was considered to be the Forest Service clearcuts. These areas are a visual contrast to surrounding uncut timber stands. The young regeneration areas are avoided by the group. The pine regeneration areas appear to be a single species, single age stand of pine. Young hardwoods in the stands are not as visible as the pine. These regeneration areasoffer very few of the desired wilderness experiences expressed by the proponents. For instance, a visitor would have difficulty traveling or seeing through most regeneration areas because of the dense tangle of young stems. Most of the proponents believe that if they wait long enough, perhaps 100 years these pine areas will be replaced by hardwood.

Ecological/Scientific/Historical

Wilderness proponents see the area as a potential schoolroom for a demonstration of natural succession free of man's interference. They anticipate the existing forest will become a fairly stable population of trees. The possibility of insect or disease outbreaks is not adverse to their perception of wilderness. Pine mortality would be fairly well accepted by them as necessary to reach a natural balance of composition between pine and hardwood.

The wilderness is perceived as an island of natural ecological processes surrounded by forested land that is not natural. The difference between the ecologically balanced wilderness and the adjacent unbalanced land will become more obvious after time. Herein lies part of the scientific value of the wilderness, as perceived by the proponents. The area could be a study area for following vegetation changes after the release from Forest Service timber management activities.

The area does have two birds on the endangered species list; bald eagle and the red-cockaded woodpecker. Wilderness proponents consider that both birds add to the desirability of the area. These birds are found in several places around the Yellowpine District.

Other ecological values frequently mentioned by the proponents are usually found in the 50 to 60 year old timber stands in the Indian Mounds Area. For instance, viewing pileated woodpeckers, squirrels, and listening to owls is most likely satisfied in timber older than 30 years old. The groups did not express an interest in activities that were satisfied only in a clearcut, or in a young pine regeneration area. Indeed, the proponents could view wildlife or collect fossils in a clearcut, but they preferred to do those activities in a mature or nearly mature forests.

Geologic/Cultural Values

The geologic and cultural values mentioned by the proponents would not be of national significance. But to some residents of east Texas, a few

features are highly regarded. Traditional stories say that early settlers frequented several of the stony watering holes in the streams of the area. These areas contain remnants of old wagon trails crossing the streams, as well worn areas where clothes washing may have occured.

A few surface rock outcrops are also prized as sources of fossilized sea shells and sand dollars. These gravel areas are also along the streams.

Indian artifacts are not frequent in the area. No significant archeological sites have been recorded. The name "Indian Mounds" is something of a misnomer. It refers to some earthen humps now believed by archeologists to be a peculiar erosional or geologic feature. These humps are about one-half mile outside the wilderness.

Scenic Values

The area provides a key need expressed by all proponents of the wilderness. They all wanted to view large trees, growing in contiguous stands across several thousand acres. The Indian Mounds area has an abundance of pine and hardwood that is near maturity. Trees with a diameter greater than 24" are common; trees over 30" in diameter are easily found. Several trees in the area are close to state champion sizes. One national champion, the little hip hawthorn is about 200 yards outside the area.

Scenic values in the dense forest of east Texas are highly valued by the proponents. Their focus in viewing landforms, plants or animals is generally within 200 yards. Long vistas are not possible because the

dense vegetation closes off a long view and blocks out the scenery. Beauty that is close to the viewer, such as a delicate orchid, is more critical to these proponents than a panorama of the lake or its shoreline. A single, two-foot waterfall along a free flowing stream is prized, and would warrant a half mile hike to enjoy it.

Proponents of this wilderness recognize its imperfections. They would not expect it to withstand a comparison test against the large unspoiled western areas such as the Bob Marshall or Gila Wilderness Areas. However, it contains the two basic ingredients necessary for their enjoyment; (1) free of future Forest Service clearcuts, (2) 50 to 60 year old trees in large contiguous stands. These two qualities are prerequisites to their wilderness experience.

OIL AND GAS IMPACTS ON WILDERNESS QUALITIES

Oil and gas development generates impacts that are adverse to a wilderness experience. Drilling and development is accompanied by the use of heavy equipment, soil disturbance, and usually roads, to name a few of the associated unnatural conditions. Mitigating adverse impacts is an obvious goal of the resource manager. One objective of this paper was to identify which oil and gas impacts adversely affect wilderness qualities in the Indian Mounds Area.

The local wilderness proponents feel that oil and gas development is adversely impacting the wilderness. Specific impacts mentioned by the local citizens are described below:

Noise - Traffic, seismograph blasting, well pad construction, drilling rigs, road maintenance, pumpjacks, gas compressors, pipeline construction.
Visual - Traffic, equipment and facilities, landform changes, cleared rights-of-way, trash, erosional scars, vegetation changes.
Smells - Wastes in reserve pits on well pads, tank battery wastes, exhausts from vehicles, compressors, drilling rigs, fumes following seismic blasts.
Contamination - Unknown adverse inputs to surface from drilling pit leaks, pipeline leaks, transport accidents, unknown subsurface inputs to water quality.
Crowding - Additional people and equipment present throughout area.
Wildlife Threatened - Fewer natural acres because of occupancy and use, roaded areas provide easy access for violators.

MITIGATION MEASURES AND CONSTRAINTS ON FOREST SERVICE MANAGEMENT

Wilderness Management Implications

Wilderness management options in Texas are constrained by the valid existing rights guaranteed in the legislation. Managers must develop mitigation measures that are appropriate to impose on oil and gas activity that is specifically allowed in the legislation. These problems are discussed in general terms in the Forest's Proposed Land and Resource Management Plan (USFS, 1985). The plan does not deal specifically with mitigating oil and gas activities in wilderness. Also, no wilderness management plans have been developed yet on the Forest.

Forest Service requirements should conform with the authority provided by the deed of mineral conveyance and its appropriate Secretary Rules and Regulations. Complications arise when the agency wishes to be more restrictive than these instruments or state law permits a surface owner.

USDA's legal counsel has been cognizant of rights possessed by mineral owners in Texas. Surface protection measures developed in other states, and their survival in courts of other states, does not ensure their support in a Texas court.

Texas law (Warren Petroleum Corp. v. Monzingo 157 Tex. 479, 3045. W. 2d 362 [Tex. 1957]) has determined that the mineral interest owner is the dominant interest. Unless limited by the terms of the deed or lease, the mineral interest owner or his lessee has an implied easement to search for, develop and produce oil and gas. The extent of the surface use is governed by key terms "reasonably necessary to carry out the purpose of the lease". Past case law in Texas has shown that a surface owner's right to sue for damages is limited to situation where (1) use of the surface is excessive or is not reasonably necessary to conduct oil and gas operations, (2) use is not for the benefit solely of minerals under the tract leased or (3) use is contrary to the provision of the lease or statutes, ordinances, governmental rules or regulations.

Protecting wilderness qualities which rest on top of ongoing reserved or outstanding mineral development is a difficult management task. Communication with and cooperation by the mineral operator becomes a key to successful wilderness management. The Yellowpine District uses an assortment of permit clauses, stipulations, and resource management plans to reduce natural resource damage. The Yellowpine's permit attachments were developed by District and Supervisor's staff (Appendix C).

Currently, one oil company is operating in the Indian Mounds Wilderness Area. The author has discussed Forest Service wilderness management goals with the company. Both parties have identified ways to mute, soften, or blend in the oil and gas activities inside the wilderness. The company is willing to use reasonable methods of resource protection. The company has accepted operating permits which expand and clarify their responsibilities for surface protection beyond those mentioned in the deed of conveyance.

The company is concerned that the wilderness legislation may prompt more expensive site restoration than originally budgeted prior to drilling these wells. A small independent company relies on outside investors to fund the bulk of costs for exploration, development, and restoration. Investors rapidly lose interest in dry holes, leaving the company with an unwanted and unbudgeted expense. The company suggests that the Forest Service provide a cost estimate for restoration prior to well development. The estimate would be used by the company to bill investors for restoration work before the well was drilled. Another alternative would be a bond collected by the agency and used for restoration later.

The current procedure on the Yellowpine for abandoning a well site is for the company to use dozers to reshape the general landform contours, waterbar roadways and remove aggregate surfacing. Soil compaction and instable grades require a ground cover, such as rye or bermuda grass that germinates on a harsh site and rapidly spreads to stabilize the watershed. These grasses do not persist once reforestation progresses in three to five years. In the wilderness, invading woody plants such as pine and sweetgum will establish naturally while the grasses are stabilizing the watershed.

Wilderness proponents understood the need to quickly stablize and recover well sites. They did not want a 2.5 acre flat pad cut out of a sloping hill. Neither did they want it to take 75 years for it to recover. However, biodegradable erosion control netting, fertilizer or temporary fencing were palatable methods to the proponents if it promised stabilizing the watershed and promoting a speedy recovery.

As one local proponent explained it, a short-term intensive rehabilitation effort was OK if it meant their wilderness would be more natural because of the effort. According to him, the"concept of wilderness transcends an individuals lifetime or any one generation, ...given time the impacts will heal..., it heals much faster in southeast Texas than out west."

Future wilderness management by the Forest Service should recognize that oil and gas development will continue. Potentially, 85 percent of the area could be developed. Trail systems should be postponed or diverted to avoid these potential development areas. Visitors to the area would benefit from interpretive signs that explain why the wilderness contains oil and gas development.

The author has proposed several wilderness management objectives concerning oil and gas development in the area (Table 2). These objectives can be compared with the preferred actions by a typical oil and gas operator. for instance, a typical operator would want to build a pipeline or road on the shortest route possible to cut down on construction costs. The wilderness manager would not want to create new openings in the forest. Therefore, the operator would need to build along a route, where feasible, that utilizes existing corridors.

Table 2. Comparison of preferred actions by mineral operator vs. wilderness manager in various phases of oil and gas development.

	Mineral Operator's Preferred Action	Proposed Forest Service Wilderness Management Objectives
Development Phase		
Activity		
Road Construction	Meet FS standards when time permits construction. Use the shortest route possible	Meet FS standards. Access by following corridors with least resource impact.
Traffic	Access sites from either end of existing roads to be closed in area. No gates. No limit on amount of traffic	Limit access to one end of roads closed to public. Operator to gate all closed roads used to access wells. Limit traffic to authorized persons.
Well Pad	Clear and utilize 2.5 acres per site.	Minimize site to 1.5 acres where feasible.
Production Phase		
Facilities	Paint tanks silver to reduce heat gain and resulting evaporation.	Paint with earth tones to blend with background.
Pump Jacks	Install gas powered engines.	Install quiet gas powered engines.
Pipelines	Clear 30' to 40' right-of-way. Use shortest route. Trench through stream channels.	Minimize clearing to 20'. Follow existing corriders. Elevate pipes over stream channels and banks.
Rehabilitation Phase		
Aggregate	Leave in place or recover for use on another project.	Remove.
Cut/fill slopes	Leave in place.	Reshape to previous contour of area. Use erosion control netting or terraces.
Vegetation	No reseeding. Volunteer plant recovery.	Prepare seed bed, seed a specified mixture, fertilize, mulch. Protect from grazing if needed.

SUMMARY

In October 1984, a 9,946 acre area of Sabine County, Texas was added to the National Wilderness Preservation System. This acreage was intensively logged 60 years ago. Now, after 50 years of management by the Forest Service, the area is covered by quality stands of pine and hardwood trees. The Forest Service did not recommend this area for inclusion to the Wilderness System because of prior impacts evidenced through the area. However, several citizens groups felt that significant wilderness values are in the area. The citizens description of these wilderness qualities allowed the author to formulate a rough description of the wilderness qualities and experiences perceived in the Indian Mounds Wilderness Area.

According to the proponents of the Indian Mounds Wilderness, the area is close to what a natural east Texas forest is supposed to be. Their perceived wilderness experience is tied directly to large acreages of uncut forest. The Indian Mounds fulfills that need fairly well. The majority of its 9,946 acres of trees is the same age, 50 years old. The presence of several roads and corridors was not considered completely adverse to their wilderness experience. The primary threat to their experience had been clearcutting.

However, the local citizens recognize that many of their enjoyed experiences, such as quiet, solitude, clear streams and uncut timber are being seriously threatened by oil and gas development. Oil and gas development is a valid existing right on approximately 85% of the wilderness.

Adverse impacts from the mineral development includes dust, noise, noxious smells, aesthetic degredation, crowding, and contamination. Most of these impacts are caused by normal oil field operations. Standard industry practices by the reserved mineral owner should be allowed to continue as provided by state law, mineral deed, and appropriate Secretary Rules.

The Forest Service in co-operation with a prudent oil company can mitigate some of the adverse impacts. Wilderness management objectives were proposed to guide future development action in the area. Some of the recommended action include minimizing work areas, prompt clean-up, utilizing existing corridors, and vigorous site rehabilitation. The key to successful wilderness management will be to stabilize disturbed areas and encourage rapid vegetation recovery. Oil and gas impacts will be obvious in the area for several generations. However, eventually the favorable climate and vigorous vegetation of southeast Texas will allow the wilderness area to recover and obscure most of the adverse impacts of development.

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Ninety-eighth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-third day of January, one thousand nine hundred and eighty-four

An Act

To designate various areas as components of the National Wilderness Preservation System in the national forests in the State of Texas.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Texas Wilderness Act of 1984".

DESIGNATION OF WILDERNESS AREAS

SEC. 2. In furtherance of the purposes of the Wilderness Act (16 U.S.C. 1131-1136), the following lands in the State of Texas are hereby designated as wilderness and, therefore, as components of the National Wilderness Preservation System:

(1) certain lands in the Angelina National Forest, Texas, which comprise approximately five thousand four hundred acres, as generally depicted on a map entitled "Turkey Hill Wilderness—Proposed", dated March 1984, and which shall be known as the Turkey Hill Wilderness;

(2) certain lands in the Angelina National Forest, Texas, which comprise approximately twelve thousand acres, as generally depicted on a map entitled "Upland Island Wilderness—Proposed", dated March 1984, and which shall be known as the Upland Island Wilderness;

(3) certain lands in the Davy Crockett National Forest, Texas, which comprise approximately three thousand acres, as generally depicted on a map entitled "Big Slough Wilderness—Proposed", dated March 1984, and which shall be known as the Big Slough Wilderness;

(4) certain lands in the Sabine National Forest, Texas, which comprise approximately nine thousand nine hundred and forty-six acres, as generally depicted on a map entitled "Indian Mounds Wilderness—Proposed", dated September 1984, and which shall be known as the Indian Mounds Wilderness; and

(5) certain lands in the Sam Houston National Forest, Texas, which comprise approximately four thousand acres, as generally depicted on a map entitled "Little Lake Creek Wilderness—Proposed", dated March 1984, and which shall be known as the Little Lake Creek Wilderness.

MAPS AND DESCRIPTIONS

SEC. 3. As soon as practicable after enactment of this Act, the Secretary of Agriculture shall file a map and legal description of each wilderness area designated by this Act with the Committee on Interior and Insular Affairs and the Committee on Agriculture of the United States House of Representatives and with the Committee on Agriculture, Nutrition, and Forestry of the United States Senate. Each such map and description shall have the same force and effect as if included in this Act, except that correction of clerical and

typographical errors in each such map and description may be made by the Secretary. Each such map and description shall be on file and available for public inspection in the Office of the Chief of the Forest Service, Department of Agriculture.

ADMINISTRATION OF WILDERNESS

SEC. 4. (a) Subject to valid existing rights, each wilderness area designated by this Act shall be administered by the Secretary of Agriculture in accordance with the provisions of the Wilderness Act governing areas designated by that Act as wilderness, except that any reference in such provisions to the effective date of the Wilderness Act shall be deemed to be a reference to the date of enactment of this Act.

(b) The Congress finds that the Indian Mounds and Upland Island Wilderness areas designated by this Act contain significant amounts of intermingled lands owned by the Temple-Eastex Incorporated and that in order to manage the wilderness in an efficient and effective manner it is in the public interest that these lands be owned by the Federal Government. Accordingly, the Secretary is encouraged to expeditiously acquire by exchange the intermingled lands owned by Temple-Eastex Incorporated. The lands acquired by the United States under the provisions of this section shall become parts of the Sabine and Angelina National Forests, respectively, and shall be administered in accordance with the laws, rules, and regulations applicable to the National Forest System and the National Wilderness Preservation System, as appropriate.

(c) Any purchaser under an existing timber sale contract wholly or partially within the boundaries of the Indian Mounds, Upland Islands, or Little Lake Creek Wilderness areas designated by this Act shall be entitled, for a period of ninety days following the date of enactment of this Act, to enter into an agreement with the Secretary to mutually cancel the timber sale contract without payment of damages by either party if the contract is not in breach and if the purchaser has completed its contractual obligations to logical stopping points as determined by the Secretary after consultation with the purchaser: *Provided,* That upon satisfaction of all such contract requirements, moneys held by the Forest Service for payment of timber to be cut under the contract shall be returned to the purchaser with interest payable from the date the moneys were deposited with the Forest Service at the rate published for use under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611).

EFFECT OF RARE II

SEC. 5. (a) The Congress finds that—

(1) the Department of Agriculture has completed the second roadless area review and evaluation program (RARE II); and

(2) the Congress has made its own review and examination of National Forest System roadless areas in the State of Texas, and of the environmental impacts associated with alternative allocations of such areas.

(b) On the basis of such review, the Congress hereby determines and directs that—

(1) without passing on the question of the legal and factual sufficiency of the RARE II final environmental statement (dated January 1979) with respect to National Forest System

lands in States other than Texas such statement shall not be subject to judicial review with respect to National Forest System lands in the State of Texas;

(2) with respect to the National Forest System lands in the State of Texas which were reviewed by the Department of Agriculture in the second roadless area review and evaluation (RARE II) and those lands referred to in subsection (d), that review and evaluation or reference shall be deemed for the purposes of the initial land management plans required for such lands by the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, to be an adequate consideration of the suitability of such lands for inclusion in the National Wilderness Preservation System and the Department of Agriculture shall not be required to review the wilderness option prior to the revisions of the plans, but shall review the wilderness option when the plans are revised, which revisions will ordinarily occur on a ten-year cycle, or at least every fifteen years, unless, prior to such time the Secretary of Agriculture finds that conditions in a unit have significantly changed;

(3) areas in the State of Texas reviewed in such final environmental statement or referenced in subsection (d) and not designated wilderness upon enactment of this Act shall be managed for multiple use in accordance with land management plans pursuant to section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976: *Provided*, That such areas need not be managed for the purpose of protecting their suitability for wilderness designation prior to or during revision of the initial land management plans;

(4) in the event that revised land management plans in the State of Texas are implemented pursuant to section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, and other applicable law, areas not recommended for wilderness designation need not be managed for the purpose of protecting their suitability for wilderness designation prior to or during revision of such plans, and areas recommended for wilderness designation shall be managed for the purpose of protecting their suitability for wilderness designation as may be required by the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, and other applicable law; and

(5) unless expressly authorized by Congress, the Department of Agriculture shall not conduct any further statewide roadless area review and evaluation of National Forest System lands in the State of Texas for the purpose of determining their suitability for inclusion in the National Wilderness Preservation System.

(c) As used in this section, and as provided in section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976, the term "revision" shall not include an "amendment" to a plan.

(d) The provisions of this section shall also apply to National Forest System roadless lands in the State of Texas which are less than five thousand acres in size.

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

Secretary of Agriculture

RULES AND REGULATIONS TO GOVERN THE EXERCISE OF MINERAL RIGHTS RESERVED IN CONVEYANCE TO THE UNITED STATES UNDER THE WEEKS LAW ACT OF MARCH 1, 1911 (37 STAT., 961)

The operations for mining and removal of gas, oil and other valuable minerals, shall be conducted in accordance with the rules and regulations prescribed by the Secretary of Agriculture of the United States of America, which rules and regulations are as follows:

1. Every person claiming the right to prospect for minerals, oil, or gas, or the products thereof, or to mine, drill, develop or operate in or upon lands acquired by the United States under the provisions of the Act of March 1, 1911 (36 Stat., 961), with a reservation to the grantor of mineral, oil, or gas rights, must, on demand, exhibit to the Forest officer in charge, satisfactory written evidence of right or authority from, through, or under the said grantor. Mining, prospecting or searching for minerals, oil, or gas, except by those producing such evidence of right or authority, is forbidden.

2. In prospecting for, and in mining and removing minerals, oil, or gas, and in manufacturing the products thereof, only so much of the surface shall be occupied, used or disturbed as is reasonable and, according to recognized good practice, necessary for the purpose.

3. In underground operations all reasonable and usual provision shall be made of the support of the surface, and to that end the tunnels, shafts, and other working shall at all reasonable times be open to inspection and examination by the Forest officers and mining experts or inspectors of the United States.

4. All miners or mining operators shall make provision to the satisfaction of the Forest officer in charge for preventing the obstruction, pollution, or deterioration of streams, lakes, ponds, or springs, by tailings, dumpage, or otherwise, or the escape of any harmful deleterious material or substance from their mines or works; and in the drilling for oil and gas, as well as in the pumping, piping, manufacturing, or operation of oil and gas wells, or plants for the production of same, the operators shall make provisions by ditches, pipes, pumps or other approved practical methods to prevent the spread or flow of oil, salt water, or other deleterious matter over the surface of the land, or into streams, lakes, ponds or springs.

5. The method commonly known as "hydraulic mining" is positively forbidden.

6. Payment at the usual rates charged in the locality for sales of National Forest timber, and timber products of the same kind or species, shall be made to the United States for all timber undergrowth, or young growth, cut, destroyed, or damaged in prospecting, mining, drilling, or removing minerals, oil, or gas, or in manufacturing products therefrom, and in the location and construction of buildings or works of any kind for use in connection therewith. All slash resulting from such cutting or destruction shall be disposed of as directed by the Forest officer when inflammable in his judgment. No timber, undergrowth, or reproduction shall be unnecessarily cut destroyed, or damaged.

7. No timber shall be cut or used for or in connection with any of the foregoing uses or purposes except with the permission of the proper officer first obtained and upon payment therefor at the price or prices fixed for timber of similar kinds, at the usual rates as specified in the above paragraph 6.

8. Buildings, camps, roads, bridges, and other structures or improvements necessary in carrying on mining, oil, or gas operations shall be located as approved by the Forest officer in charge, except as to the location of oil or gas derricks, rigs, boilers and tanks, which are to be located, however, according to recognized good practice. When a building, camp, or other structure is removed from one location to another, all debris resulting from such removal shall be burned or otherwise disposed of as directed by the Forest officer in charge.

9. All buildings, camps and other structures shall be removed within six months after the completion of mining, oil, or gas operations, or the commercial exhaustion of the aforesaid minerals, oil, or gas; and all buildings, other structures, materials, tools, and equipment not removed from the land of the United States within six months after the aforesaid completion of mining or gas operations, or the commercial exhaustion of the aforesaid minerals, oil or gas, shall become the property of the United States.

10. All destructible refuse, waste material and other debris caused by the mining use, oil or gas operations hereunder which interfere with the administration of the Forest or endangers forest growth, shall within six months after the completion of said operations, or the commercial exhaustion of the aforesaid minerals, oil, or gas, be disposed of as directed by the Forest officer in charge.

11. While operations are in progress, the operators, contractors, subcontractors and employees of contractors and subcontractors at work on the National Forest shall use due diligence in the prevention and suppression of all fires within that particular locality, and shall be held responsible for any fires of which they are directly or indirectly the cause.

Appendix C

Permit Clauses and Attachments for Well Sites on the Yellowpine District

CLAUSES

1. *This permit is subject to all valid claims.*

2. *In case of change of address, permittee shall immediately notify the forest supervisor.*

3. *The permittee shall comply with all requirements of the laws of the State of* Texas *, as well as the laws of the United States.*

4. *The permittee shall be responsible for the prevention and control of soil erosion and gullying on the area covered by this permit and lands adjacent thereto, and shall provide preventive measures as required by specifications attached to and made a part of this permit.*

5. *No waste or byproducts shall be discharged if it contains any substances in concentrations which will result in substantial harm to fish and wildlife, or to human water supplies.*

   Storage facilities for materials capable of causing water pollution, if accidentally discharged, shall be located so as to prevent any spillage into waters, or to channels leading into water, that would result in substantial harm to fish and wildlife or to human water supplies.

6. *The permittee shall protect the scenic esthetic values of the area under this permit, and the adjacent land, as far as possible with the authorized use, during construction, operation and maintenance of the improvements.*

7. *No national forest timber may be cut or destroyed without first obtaining a permit from the forest supervisor.*

8. *All access roads will be built on locations and to specifications approved in advance of construction by the Forest officer in charge.*

9. *The permittee shall provide, whenever requested by the forest officers, a way across the land covered by this permit for the free ingress or egress of forest officers and for users of national-forest land and purchasers of national forest products.*

10. *The permittee shall fully and currently repair all damage other than ordinary wear and tear, to national forest roads and trails caused by the permittee in the exercise of the privilege granted by this permit.*

11. *The permittee shall comply with the regulations of the Department of Agriculture governing the national forest, observe all sanitary laws and regulations applicable to the premises, and keep the premises in a neat and orderly condition.*

12. This permit may be transferred with the approval of the officer by whom it was given or his successor, subject to such conditions as may be imposed at the time of transfer. It shall terminate upon breach of any of the conditions herein but in event of such termination a new permit will be issued upon application when the causes for termination of the preceding permit have been satisfactorily remidied and the United States reimbursed for any resultant damage.

13. No Member of, or Delegate to, Congress shall be admitted to any share or part of this agreement or to any benefit that may arise herefrom unless it is made with a corporation for its general benefit.

14. In the event of any conflict between any of the provisions contained in this permit and provisions contained in the Secretary's Rules and Regulations, the provision of the latter will control.

ATTACHMENT #1

Restoration and Resource Protection Plan

ACTIVITY PHASES

PHASE	DESCRIPTIONS & CONTROLS
1. Notification for proceeding	District Ranger shall be notified in advance of all work involving surface disturbances. A minimum of 5 working days is requested when feasible.
2. Removal of vegetation	All vegetation shall be cut and removed from location or disposed of as directed by the Forest Service.
3. Construction of well location	Construction of well location shall be approved by the Forest Service prior to authorizing drilling operation.
4. Drilling operation	No excavation will be done during the drilling operation unless approved by the Forest Service.
5. Installation of production facilities	The location of production equipment and flow lines will be shown on a map and approved by the Forest Service.
6. Location stabilization and other resource protection	These items will be done as specified in Attachments #2 & #3.
7. Road construction (access road)	The road will be constructed and maintained according to Attachments #4 & #5.

ATTACHMENT #2

SPECIFICATIONS IF WELL IS A PRODUCER

Specifications for well:

1. Site Plan - A schematic layout of the rig location, pits, and other facilities necessary to the drilling and production operations will be submitted by the operator for approval by the District Ranger.

2. Stumps and Slash Disposal - Stumps and slash resulting from drilling activities shall be disposed of as directed by the Forest Service. In no instance will any stumps or slash be buried within the perimeter of the well site.

3. Activity Locations - All activities made necessary by the drilling operation shall be confined to that area shown on the location plat and designated on the ground.

4. Clean-Up - Clean-up of area must be complete and done daily. All equipment, junk, trash, garbage, etc. shall be removed Until disposed of properly it must be kept in a container or pit. Portable toilets to be used and waste hauled to an approved disposal plant.

5. Disturbed Area - The disturbed area shall be left reasonable smooth with all holes and depressions filled in.

6. Slopes - Back-slopes and fill-slopes shall be constructed, if possible, on a 3 to 1 slope. If a 3 to 1 slope is not possible, the slopes shall be fitted into the topography as directed by the Forest Service.

7. Erosion Control Structures - Adequate provisions shall be made to provide for breaking up water flow on the well site slopes. This can be accomplished by establishing contour terraces at intervals across the slope. Intervals should be dictated by the ground conditions as instructed by the Forest Service.

8. Fertilization - Following the construction of erosion control structures, a complete fertilizer such as 13-13-13 or any other complete fertilizer will be applied to the area to be revegetated in quantities necessary to furnish a minimum of 65 pounds of nitrogen per acre.

9. Disking - When necessary, a tractor and disk will be used to prepare a proper seed bed.

10. Seeding - Seed will be applied to a prepared seed bed according to attached sheet "Seeding Species, Rates and Seasons".

11. Mulching - Any acceptable mulch (e.g. hay or straw) will be applied at the rate of at least 1 ton per acre on the revegetated area.

12. Reserve Pit - As soon as drilling of well is completed, liquids and drilling mud in the reserve pit are to be pumped out by vacuum truck, the pit allowed to dry and then backfilled and levelled as soon as possible. The pit must be fenced to keep cattle out until properly restored.

ATTACHMENT #3

SPECIFICATIONS IF WELL IS A DRY HOLE

Specifications for well:

1. Clean-up - Clean-up of area must be complete. All equipment, junk, trash, garbage, etc. shall be removed or buried. Until disposed or properly it must be kept in a container or pit. Portable toilets to be used and waste hauled to an approved disposal plant.

2. Disturbed Area - The disturbed area shall be left reasonably smooth with all holes and depressions filled in.

3. Slopes - Back-slopes and fill-slopes shall be constructed, if possible, on a 3 to 1 slope. If a 3 to 1 slope is not possible, the slopes shall be fitted into the topography as directed by the Forest Service.

4. Erosion Control Structures - Adequate provisions shall be made to provide for breaking up water flow on the well site slopes. This can be accomplished by establishing contour terraces at intervals across the slope. Intervals should be dictated by on the ground conditions as instructed by the Forest Service.

5. Fertilization - Following the construction of erosion control structures, a complete fertilizer such as 13-13-13 or any other complete fertilizer will be applied to the area to be revegetated in quantities necessary to furnish a minimum of 65 pounds of nitrogen per acre. Lime and fertilizer rates to be determined by soil analysis.

6. Discing - A tractor and disc will be used to prepare a proper seed bed.

7. Seeding - Seed will be applied to a prepared seed bed according to attached sheet "Seeding Species, Rates, and Seasons".

8. Mulching - Any acceptable mulch will be applied at the rate of at least 1 ton per acre on the revegetated area.

9. Reserve Pit - As soon as drilling of well is completed, liquids and drilling mud in the reserve pit are to be pumped out by vacuum truck, the pit allowed to dry and then backfilled and levelled as soon as possible. The pit must be fenced to keep cattle out until properly restored.

SEEDING SPECIES, RATES, AND SEASONS

Spring (March 1 - May 31)

Species	Rate - Lb./Ac. in Mixture	Remarks
Grasses:		
Pensacola Bahia	7	
Common Bermuda	5	
Red Top	4	Seed in combination with either of above.
Legumes:		
Common Lespedezas (Korean & Kobe)	15	Plant in February or early March.
Partridge Pea	10	" "
Louisiana White or Ladina	3	Use inoculated seed.
Brown Top Millet	3	

Fall (September - February)

Grasses:		
Fescue	12	
Pensacola Bahia	10	
Perennial Rye	10	
Red Top	5	Seed in combination with any of the above.
Legumes:		Use inoculated seed.
Crimson Clover	10	Seed in early Fall.
Partridge Pea	10	Plant in February.
White Clover	5	Use natural seed.

Use mixtures of at least 3 species. Inoculate all legumes.

Mixtures should contain three or more of the species listed above. For example, Bahia - 7 lb., Red Top - 4 lb., and Common Lespedeza - 15 lb., total pounds per acre is 26. All mixtures should contain at least one legume.

ATTACHMENT #4

ACCESS ROAD AND DRILL SITE

1. Vegetation to be cut close to ground with minimum of soil disturbance.

2. Road and drill site to be surfaced with boards and/or gravel.

3. As soon as drilling operations cease:

   (a) If a producer, the boards and/or gravel are to be removed and gravel surface installed on only such portions of road and drill site as is needed for production purposes.

   (b) If a dry hole, the boards and gravel are to be removed and all disturbed areas seeded according to attached sheet "Seeding Species, Rates, and Seasons". Fertilization will be according to Attachment #3. Adequate cross drains are to be installed to prevent movement of soil.

ATTACHMENT #5

ROAD CONSTRUCTION

1. A specified system road to the site will be constructed according to the following engineer's report.